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Socio - cultural investigation of visual dyslexic cognition

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A thesis submitted in fulfillment of the degree of Doctor of Philosophy at
Norwich University of the Arts and the University of the Arts, London

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The work presented is the candidate's own

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Abstract

The thinking approaches of dyslexic visual artists in their creative production have been little analysed, either in isolation or in comparison with non-dyslexic artists. This research investigates the nature of visual dyslexic cognition and tests for cognitive differences between dyslexic and non-dyslexic artists. It does so by systematically exploring their respective thinking approaches to creative visual production. The socio-cultural framework of investigation further argues the value of a distinctively dyslexic mode of visual thinking to mainstream education and society.

The fieldwork included a purposive sampling of 44 artists with data collected and interpreted through mixed methods, using a range of tools. The research is positioned within cognitive and social constructivist perspectives, recognising that independent thinking is an integrated cognitive process of conceptualising inner, outer environments and complex social interactions. Thus the research methodology is both ethnographic and phenomenological. Dyslexic visual thinking within a socio-cultural context is explored to give context to the concept of creativity, visual language and the value of arts education as enabling processes of thinking and conceptual development. The research focus emerged during the first stage of the fieldwork; the investigation of dyslexic artists indicated that their visual creative practice is produced through the skill of thinking within a multi-dimensional context.

Through three stages of fieldwork, the research evidenced a dyslexic cognitive culture positioned within the dynamic of the 'outsider'. A triangulation of methods was used within the data collection and analysis to reach conclusive findings. The main research findings are: the dyslexic capacity for creative non-linear or 'flowed' visual cognition within a multi-dimensional conceptual framework; that this ability is so taken for granted that the dyslexic artists did not consider this to be different or of any greater value. The research found that dyslexic artists can have certain cognitive strategies, which may be underdeveloped in non-dyslexic artists yet these cognitive strategies can be taught to non-dyslexics. The research draws conclusions from these findings by further discussing the benefit of this thinking to education, the workplace and, also, to a technological and increasingly entrepreneurial society where divergent thinking contributes to creative production.

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Introduction

Art and design courses and the prison population are both locations where the incidence of dyslexia is higher than average. This gives an indication of how dyslexic people with different abilities and ways of thinking tend to find alternative routes to employment, education and training. More than 10% of the population is suspected of having a learning difference (BDA, 2014), but it is unclear exactly how many students in schools and colleges and Higher Education (HE) are different learners.

There has also been little attempt, hitherto, to pay any detailed attention to the cognitive and thinking processes of dyslexic graduates of art and design courses in negotiating the creative workplace. However the different abilities of such people raise questions as to whether such strategies are similar or different to the creative processes of non-dyslexic graduates.

This research, then, sets out to investigate a range of creative visual practitioners, both dyslexic and non-dyslexic, who have navigated mainstream education with a set of cognitive strategies drawn from life experience. The purpose has been to find out by way of, 1, a series of case studies, 2, a survey, and 3, semi-structured interviews of both dyslexic and non-dyslexic visual artists whether different learning (dyslexia) involves significant differences in thinking toward visual creative production.

Stage one, dyslexic case studies, investigates the validity of the research. The research focus was formulated during stage one to investigate visual creative practice produced through the skill of thinking within a multi-dimensional context. This thinking includes a range of dimensions; time, sound, spatial depth, linear and one dimension or one point of reference. Stages two and three test the validity and reliability of data collected on dyslexic thinking in creative practice. The approach to the data collection considered the following: subjective experiences, interpretation of inner and outer environments and the socio-cultural contexts of these experiences (see p.63).

The research discusses the thinking approaches acquired by dyslexic visual artists that can bring value to mainstream education, training and employment (see Chapter 9). In Chapter 10 the research goes on to discuss dyslexics', or different learners' capacity for non-linear thinking. For dyslexic people, to reach Higher Education (HE) and achieve qualifications means unusual determination, hard work and imaginative coping mechanisms. Dyslexic learners are often gifted, but traditional study methods can be a barrier, preventing some from achieving their full potential.

William Gosling, Professor Emeritus in Electronic Engineering at the University of Bath, writes about his own difficulty in coping with rote mainstream learning.

'What advice do I have for dyslexic academics? Simply this: break a lifetime habit of hiding your dyslexia. Make a stand as dyslexic. In all universities we need dyslexics.' (Gosling, 2007).

Dyslexic learners have always been part of the mainstream higher education system and we know through Higher Education Statistical Agency (HESA) returns that they have primarily settled in courses that are vocational and practical. These courses tend to facilitate an applied learning approach and so enable the dyslexic learner to actively engage with learning through a range of action-based experiences. These experiences can enable the production of work through a cyclical process of reflection, critical analysis and action-based production.

This research is placed within a socio-cultural context underpinned by social constructivist perspectives (see Chapter 2). All the dyslexic and non-dyslexic artists, who were part of this research progressed through higher education within a visual arts course. Through a comparative analysis of these two groups, the research seeks to investigate strategies that might be intrinsic to dyslexic creative thinking. The research positions the dyslexic individual within a value-based paradigm and seeks to articulate this value in a socio-cultural context (see Chapter 9). The overall aim is to reach conclusions about the thinking approaches of dyslexic artists to their visual creative practice.

The research focus was established during the fieldwork. Visual creative practice is produced through the skill of thinking within a dimensional context that is divergent and multi-faceted. A dyslexic approach often develops outside mainstream secondary education.

The research questions and research aims are set out as follows:

1, Questions:

- Why is this research necessary and why am I engaged with this research?
- What are the thinking approaches of visual artists and specifically dyslexic visual artists?
- How does this approach to thinking impact on the work of arts practitioners?
- What are the implications of these approaches in mainstream education, employment and training?
- What is the socio-cultural value of dyslexic thinking?
- How will this investigation enhance debate in mainstream education?

2, Aims:

- To fill the gap in knowledge by investigating the thinking experiences of dyslexic visual artists
- To set context by investigating the thinking, learning and life experiences of dyslexic visual artists.
- To examine visual arts practitioners' thinking styles and ways in which they impact on the production of work and the visual arts.

- To reach conclusions about the thinking approaches of dyslexic artists in their visual creative practice.
- To consider how the findings can be disseminated and thus contribute to debate in learning and teaching.

As regards procedural requirements, ethics approval was secured twice, once with Anglia Ruskin University in 2006 at proposal stage and then with Norwich University of the Arts (NUA) and the University of the Arts London (UAL) research committees following confirmation stage in 2010 and in 2011.

An RF3 form (2011) explained the process of recruitment and sampling quotas and was approved by NUA and the UAL research committees. The ethics approval agreed the recruitment methods for the participants and also the sample quotas for each stage of the research.

As regards research design, the samples were agreed as 4 case study participants including myself (Stage one) and 20 survey participants (Stage two). However the research surveyed 40 participants; 12 dyslexic artists and 28 non- dyslexic artists at Stage two. The third stage, which was the semi-structured interviews, was agreed as 10 interviews with 5 dyslexic artists and 5 non-dyslexic artists. All participants were over 18 years old and briefed about the research aims, objectives, methodology and anticipated research outcomes.

The largest sample was at the survey stage to gain a large enough pool of 40 from which to select two sample groups totaling 10 for the semi-structured interviews. Baker and Edwards, in their National Centre for Research Methods Review Panel paper 'How many qualitative interviews is enough?', discuss what constitutes an adequate sample for qualitative research. They note that the number of people required can vary from one to a hundred or more. They advise a broad range of between 12 and 60 (Baker and Edwards, 2012, p. 10).

‘How many qualitative interviews is enough? Every experienced researcher knows this question has no reasonable answer, no magic number you can do and then you’re out of danger. The only possible answer is to have enough interviews to say what you think is true and not to say things you don’t have that number for. The kinds of things you might want to say take a lot of forms and so require varying numbers of interviews’ (Becker cited in Baker and Edwards, 2012, p. 15).

This research sampled 44 participants of whom 40 were part of a survey questionnaire and 14 were interviewed (10 were drawn from the survey). The research worked with purposive sampling to investigate clearly distinct groups, this being two groups of visual artists: one dyslexic and one non-dyslexic. The research questions’ goal was to focus on the particular characteristics of visual artists and in particular of dyslexic visual artists in their thinking to production. The sample is not representative of the population as a whole, thus purposive sampling provided a research choice for the qualitative mixed method approach to the investigation (Teddlie.C and FenYu, 2009, p. 80).

The ethics protocols put in place informed consent, this confirmed participant anonymity throughout the research investigation. Personal data was anonymised via coding for the participants. However the case study artists were very clear that they wished to have their names profiled next to their practice during the two research exhibitions. This was an important element of the exhibition as this formed an integration of their practice, identity and thinking. Prior to the case study interviews (Stage one) and the ten semi-structured interviews (Stage two), each participant was given information about the research and a consent form to sign (see Appendix K, p. 326). All the 40 participants who took part in the survey were briefed and enabled to disclose their details if they wished to be acknowledged by the research (see Appendix A, p. 297). The data generated from the fieldwork is stored in a secure password protected computer and locked in a secure room where the only access to the room is via the researcher.

The RF3 form identified that there were no major potential risks. A risk assessment was made for the interview venues. Throughout the research process it was the researcher's responsibility to ensure that appropriate briefing and debriefing happened for the participants. No research participants demonstrated any anxiety; had this happened, participants would have been given reassurances. All participants were briefed about the right to withdraw at any time. The right to withdraw ensured that participants felt they could be an integral part of the research process, with the research designed to bring positive benefits for the participants in facilitating a positive discussion about their thinking to visual production. Participant confidentiality was of prime importance with anonymity guaranteed unless otherwise stated by the participants (see Appendix K, p. 326).

This qualitative research recognises that the researcher (a dyslexic) can influence the research process. Thus work on reflexivity acknowledges the researcher's personal thinking and position within this research (see p. 82). Thus the approach to this research has not been linear but continuous in development and with a narrative moving back and forth to develop the contexts and argument. Therefore each of the fieldwork stages flowed to the next stage to inform the research investigation (see p. 217).

Summary outline of thesis

Chapter 1; 'Overview of Dyslexia', gives an overview of the purpose of the research, introduces dyslexia and the socio-historical context regarding the progression of the dyslexic individual within mainstream education and the historical educational contexts of learning, testing and assessment, including dyslexic diagnostic tools for testing. The chapter initiates the research aims and starts by seeking to define historical and recent perspectives on dyslexia. The chapter further discusses recent dialogues on the value of dyslexic thinking and creativity.

Chapter 2; 'Literature and theoretical considerations' contextualises the research aims and outlines the underpinning theoretical territory to reach conclusions on the thinking approaches of dyslexic artists in their visual creative practice. The literature and theoretical considerations place the research within a cognitive and social constructivist paradigm. This position results from a review of the nature of creativity, the visual production of dyslexic artists, the socio-cultural impact of visual language, the theoretical perspectives which underpin arts higher education and the concluding recognition that an integrated approach to the cognitive value of visual dyslexic thinking is useful to a modern day society.

The chapter investigates the background to a variety of theoretical perspectives that have informed the development of pedagogy in mainstream education. The discourse analyses the creative thinking abilities of dyslexic artists and why arts-based courses tend to support dyslexic thinking and to recognise dyslexic strengths. The chapter charts the specific underpinning theoretical perspectives that have informed art and design curricula. Thus the chapter goes some way toward mapping the grass-roots growth of relevant organisations, individuals and their perspectives contextualised within a value based socio-cultural and visual language paradigm.

There is emphasis on the nature of creativity and how this sits within academic debate to understand further the nature of thinking and learning, multiple intelligences, dyslexia and creativity within a construct that is underpinned by cognitive and social constructivist discourses. In the context of this theoretical thinking the chapter moves forward to discuss cognitive perspectives within arts education and the value of an integrated approach to different thinking within organisations.

Chapter 3 outlines the methodology as a mixed-method approach to the collection of evidence. The investigation of this research positions the theoretical perspective within the experiential and social construct of cognition and investigates whether information represented in the working memory, and

in particular dyslexic working memory, may be visualized within our inner and outer environments. Thus the methodology has been devised as an iterative process incorporating the underpinning cognitive theoretical perspectives of the research within the rigour of a three-stage process of research investigation. Within this iterative process the research focus is articulated to introduce the rationale to the mixed-method approach. The chapter introduces the theoretical models of action research as inductive and culturally aware processes of evidence gathering. Kemmis and McTaggart (2007) are noted as providing a narrative for the spiral model of action research of cycles of reflection and action-based enquiry. The chapter outlines the triangulation of research tools that are primarily qualitative, benchmarked with statistical data.

The methods of analysis are positioned within phenomenological and ethnographic research approaches; this extends to my own reflexive involvement and the location of my artistic practice within this piece of research as an autobiographical dialogue. The case study methodology is rooted in an ethnographical approach. Stages two and three test the validity and reliability of data collected for any phenomena of dyslexic thinking in creative practice, subjective experiences and interpretations of inner and outer environments. The stages of the research data collection are outlined, as are the methods of data collection and analysis as being interpretative and participatory to gather the evidence within the cognitive and social construct of dyslexia. The ethics approach, research questions and outline of the sampling, provide contextual information in support of the methodological approach and theoretical position.

Chapters 4, 5, 6 and 7 provide a narrative of the fieldwork. Chapters 4 and 5 cover the dyslexic case studies (Stage one). These chapters provide the evidence from which the investigation continues as a piece of research that might have value. The research focus was formulated during stage one to investigate visual creative practice produced through the skill of thinking within a multi-dimensional context.

Chapters 6 and 7 are a comparative investigation of non-dyslexic and dyslexic patterns of thinking. These are Stages two and three of the fieldwork that test the validity and reliability of the research through the data collection methods. The thinking-to-practice of all the artists was intrinsic to the fieldwork and is evidenced through visual, aural and text-based means. The sampling is purposive, to investigate clearly distinct groups of non-dyslexic and dyslexic visual artists (see Introduction and Chapters 3 and 8). There is a narrative around the data collection methods with a consistent focus on the research questions. The fieldwork is a triangulation of mixed-methods to collect the data, incorporating a range of tools that are visual, aural, oral and text-based.

Chapter 8, 'Comparative analysis and findings across the fieldwork' analyses the findings of the fieldwork as a summary of each of the three stages of the mixed-method research. The chapter is set out according to each stage with a narrative to explain the approach to the investigation to then analyse the main themes to emerge from each stage. To give meaning and context, the use of the data collection tools are referenced to test the validity and reliability of the research. The sampling is again outlined to provide the purpose of the approach. The triangulation of data collection is further outlined as an approach to the analysis, which is one of a triangulation of analysis; comparative observation, interpretative phenomenological, and statistical, with reference to Mason (2006).

The narrative outlines the themes connected to dyslexic and non-dyslexic artist thinking. The narratives discuss the 'outsider and others', dyslexic thinking in technology and communications and thinking to creative production manifested as 'flowed visual cognition'. Finally the chapter outlines the discourses and characteristics of this cognition to give a contextual summing up in reference to the theoretical perspectives of Bruner (1960) and Dorn (1999) and that of the value of an integrated approach to cognition and the value of a spiral curriculum. This summing up goes on to introduce the next chapter, which addresses the socio-cultural value paradigm of a dyslexic

culture and 'flowed' visual cognition (the grammatical solecism 'flowed' is deliberate and is used as such throughout this dissertation).

Chapter 9, the socio-cultural context of the outsider and 'flowed' visual cognition discusses the dyslexic individual within a value-based paradigm and seeks to articulate this value in a socio-cultural context. The chapter discusses aspects of the research findings, namely: relevant cognitive strategies; dyslexic subjectivity (emotional resilience and self-contained individualism in navigating a global multifaceted society); dyslexic culture (see Glossary, p. 293). The concept of the 'outsiders and others' is discussed within the context of the socio-cultural position of people with dyslexia, typical gathering places for those with dyslexia, and the predominance of dyslexic people within arts education. The chapter further contextualises these positions by discussing the efforts, through several mainstream educational and workplace initiatives, to become more inclusive of those who think and learn in a different way. Reference is made to the continued preference for mainstream testing, notwithstanding contrasting research from the Sir John Cass Business School which suggests that different dyslexic thinking is of value to the world of work and entrepreneurial practice (Halfpenny and Halfpenny, 2012). Technology is discussed as important to an increasingly entrepreneurial society where divergent thinking can contribute to creative production.

Chapter 10, the conclusion sums up the comparative findings and outlines the contribution to knowledge. The main research findings being: the dyslexic capacity for non-linear thought, dyslexic cognitive strategies, that non-dyslexics can profitably learn from. This section brings together the qualitative data to argue the value to society of 'flowed' visual cognitive methods particular to dyslexic artists. The characteristics of this form of cognition are outlined and discussed within an ethnographic and integrated cognitive paradigm (Efland, 2002) and in a creative production paradigm (Boden, 1990). The multiple dimensions of 'flowed' visual cognition is therefore described in the context of a learning strategies beneficial to education and the workplace

The contribution to knowledge

The research contributes to filling a gap in knowledge on visual cognitive thinking through the investigation of a range of creative dyslexic practitioners who have navigated mainstream education with a set of learning strategies drawn from life experience. The purpose was to find out, through a series of case studies (one of these cases being my own), a survey, and in-depth semi-structured interviews of dyslexic and non dyslexic visual artists, what are the approaches to dyslexic ability in thinking and creativity; to further demonstrate the value of such abilities within mainstream education, training and employment (see Chapter 9). In Chapter 10 the contribution to knowledge is discussed and the key findings connected to dyslexic visual cognition. The research indicated that dyslexic artists did not recognise the value of their ways of understanding and conceptualising. Accordingly, neither dyslexic people nor organisations and policy makers have articulated enough the value of this thinking. Therefore Chapter 9 argues that dyslexic thinking is still positioned on the outside of mainstream systems and as such is an intellectual loss to society.

Chapter 1: Overview of Dyslexia

1.1 Perspectives on dyslexia

Dyslexia has often been described as a 'difficulty'; the British Dyslexia Association (BDA) official statement outlines dyslexia as a difficulty affecting literacy and language, difficulties with working memory, rapid naming, processing speed, phonological processing that does not match the cognitive abilities of an individual (BDA, 2014). Dyslexia is known as a disability and as such can be seen as an issue, deficit, a special need, a dysfunction and hence a difficulty. Over the last twenty years dialogue around dyslexia has been slowly changing to refer to dyslexia as: different wiring; many strengths and talents, gifted or visual thinking (West and Stein cited in Pollak, 2005, p. 4). In 2010 Ross Cooper, academic and social scientist, wrote a holistic manifesto on dyslexia where he described dyslexia as a difference within complex social interactions. This position moves away from difficulty to one of a position within a social construct. Thus, rather than an issue or problem, dyslexic thinking is starting to be viewed as a value (see Chapter 2).

In the wake of recent trends in dyslexia studies (see below), this research seeks to investigate significant aspects of dyslexic thinking in terms of value rather than deficit; hence the term 'dyslexia' is discussed as a positive construct within cognitive and socio-cultural contexts. The research investigates the thinking patterns of dyslexic and non-dyslexic artists to first evidence any differences (see Chapter 8) and to then debate the value of dyslexic thinking within our society (see Chapter 9). David Pollak notes that there is very little literature on adults with dyslexia and their dyslexic viewpoint. Pollak further talks about the historical tendency for dyslexia to be discussed from a neuropsychological stance; this has roots in the World Federation of Neurology (WFN) statement that dyslexia is a disorder manifested by difficulty learning to read (WFN, 1968 cited in Pollak, 2005, p. 14).

Since 1968 there has been a growing change in perspective, with Singleton stating 'dyslexia is properly described as a syndrome: a collection of

associated characteristics that vary in degree and from person to person' (The National Working Party; Singleton 1999 cited in Pollak, 2005, p. 3). This moves dyslexia away from a medical viewpoint and into one of a social construct whereby the individual is recognised as having specific abilities. Increasingly, since the National Working Party (NWP) on Dyslexia met in 1999, there has been a growing discourse amongst experts and educationalists about the differences and valued abilities of dyslexia rather than dyslexia as a disability. This led Singleton to declare in 2000 that 'Dyslexia is a condition which results in differences thus causing difficulties in specific areas of learning, particularly literacy. It may confer advantages in other skill areas, such as visual or practical thinking' (Singleton 2000 cited in Pollak, 2005, p. 5).

Certainly there are interesting scientific explanations as to why dyslexia exists and why there can be particular dyslexic coping strengths. Beverley Steffert talks about 'minicolumns' in the brain that are varied in width thus enabling the dyslexic person to make broader and wider links (Steffert, cited in Alexander-Passe, 2010 p.194). Stein and Walsh suggest that dyslexia is caused by sensory defects in 'magnocells' thus causing unstable images carried to the visual cortex of the brain from the retina (Stein and Wash, 1997 cited in Mortimore, 2003, p. 50). However the definition of dyslexia has gradually moved from one based within a medical paradigm to one of social context. Rather than the dyslexic individual as the one to adjust in society it is society that should adjust to the individual. In 2006 Cooper stated:

'We challenge the deficit models of dyslexia in favour of a social model that maintains that we are not 'disabled' by our dyslexia, but by the expectations of the world we live in. There is nothing 'wrong' with being dyslexic per se. We would argue that dyslexia is an experience that arises out of natural human diversity on the one hand and a world on the other where the early learning of literacy, and good personal organisation and working memory is mistakenly used as a marker of 'intelligence'. The problem here is seeing difference incorrectly as 'deficit'.

'Many of us who have been made to feel 'stupid' by these disabling experiences have adopted 'dyslexia' and 'dyslexic' as terms of empowerment that confront the deficit model, challenge disabling expectations and requirements, and promote the many strengths associated with dyslexia such as visual thinking, entrepreneurial skills, vision, creativity, lateral thinking, as well as hands-on and artistic skills.' (2006)

By 2010 Cooper had produced his 'Bagatelle' model of dyslexia:

'The reality is that people with "specific learning difficulties" are at one end of a continuum of difference from those not considered to have such difficulties, even if the intrinsic differences are largely hidden. I argue, through my Bagatelle Model, that the key to understanding the nature of the difference is simple. We have a strong preference for processing information holistically (all-at-once), rather than sequentially (step-by-step). Most people can use both strategies, but some can only use one effectively. When anyone processes information holistically, it requires imagination to see and manipulate the patterns in the information; it requires very little working memory. In contrast, when anyone processes information sequentially, it requires working memory and very little imagination. It is this intrinsic difference that plays out through complex social interactions and experiences, leading to the appearance of specific "difficulties", or indeed "facilities".' (2010)

Thus this research sets out to investigate dyslexic thinking within a socio-cultural perspective. It is from this philosophical viewpoint that dyslexia is defined as a difference in thinking positioned within a value-based paradigm.

1.2 What is the dyslexic perspective I am bringing to this research?

Visual language is a language we experience when we are born; although our vision is blurred at this time, we learn to know this language and refine it to gain meanings about the immediate place we inhabit. As we grow older this place becomes bigger with many more complex meanings. We store our visual images to construct and make sense of a world also inhabited by other

people speaking. As a dyslexic creative practitioner the recognition that there are different visual languages is important to understand the perspectives of others within our social environments. Part of this recognition is to become pragmatic and philosophical about systems within a society, something that often requires results compliant with a more linear and sequential way of thinking. Often these systems are hard to navigate particularly in the knowledge that others (non-dyslexics) universally understand them. There can be limited meaning because we do not recognise any associated meaning from our own cognitive experiences. How we see and think is how we position ourselves in the world; through this understanding we start to know that others can see us too as part of this visual world. Thus we are to comply or fit in. The position we place ourselves in, and the position the majority place us in, are the start of our social construct.

Our experiences, cultural influences, cognitive thinking and our place in society inform 'the way we see and think'. When, as a dyslexic creative practitioner, I conceptualise this visually, I see an overarching transparent dome from above where there are several platforms of information at different levels. From this conceptual dome my thinking will move from platform to platform spinning in a spiral motion to unravel meaning. Rather like a web of information that is spun back and forth for sense of underpinning meaning to the concept. This is the approach I have applied to this research.

Within the research fieldwork, case studies of dyslexic artists were investigated to find out if there was any value to the focus of the research. These case study participants came to the research through self-selection, i.e. artists who, via a previous assessment, already knew they were dyslexic. My own thinking style is one that is divergent in approach. As one of the case study participants, I chose to investigate my own visual creative practice and my own approach to this research work. Within my recent creative practice I have explored ideas that are framed within symbolic meaning. I will look at a series of images that are linked to an overall concept that I wish to investigate.

There has to be a starting point and this is often random. From that point a mapping process happens across many different points of reference. By mapping all the time I move in a different direction, then might stop for a while whilst I reflect once more on the possibility of the whole concept; thus there is a convergence of thinking points. Constant movement across the work informs the next set of marks feeding off each thought process to build up a final image. The work is rendered by any means to hand that can express images; chalk, pencil, torn, juxtaposed photographic images, paint. This is not a fixed process of thinking and anything can happen on the way.

I therefore set out to locate my own approach to thinking and practice within this research to help provide a starting point for the investigation, in the knowledge that this was a changing process. Through this evolving approach the focus was established by stage two of the research. I started this research in a structured step-by-step way, with a method I thought was traditional, by planning to read a wide range of theoretical material to underpin the discourses started by the practice-based research. However, my way of gaining information is to scan, scope and pick out bite-sized chunks of information that cross-reference continuously. Rather than working from a point of detail and working up to the concept, I was working from the concept down to the detail. This is my way of thinking and to approach the research I had to recognise this and work out strategies for the collection of large amounts of information.

My work in the Institute of Education library (IoE at UCL) and on the internet was a continuous mapping of key references in the body of the texts. The real challenge for me was to keep focused as I have a preference to leap from one piece of thinking to another, making links that map a very wide territory. Potentially this could be called 'a dyslexic way of thinking'; 'to go off at a tangent' or 'divergent thinking'. My challenge, with regards to this research, was to maintain focus as my thinking constantly expanded outwards. I am intensely curious and enquiry-based within an ever-growing framework of referencing. I ended up with photocopied sections of relevant texts carried

around with me to remind myself of the focus of the research and a room with paperwork laid out so that I could constantly see tangible evidence.

My educational history is one of difficulties with working memory, which means I have to reconfirm information through visualisation, discussion and the actions of doing and reflection to ensure depth of understanding and storage in my long-term memory.

Within this research I have set out to construct an action-based approach to the research methodology (see Chapter 3). The location of my own practice is rooted within this methodology: a phenomenological account of subjective and objective experiences. This position extends to an ethnographic investigation of the dyslexic visual artists' thinking. The research is positioned within a cognitive social constructivist perspective, taking into account historical, social and cultural influences on the dyslexic experience and dyslexic visual thinking. The cognitive perspective recognises the individual's ability to perceive, assimilate and construct meaning from inner and outer environments. Bloom's Taxonomy assumed that learning is cumulative and hierarchical with cognition coming first (Bloom cited in Efland, 2002, pp. 19-29). Thus we accumulate knowledge through our own independent patterns of thinking to develop learning and behaviour. Efland, cited in Chapter 2 of this investigation, notes that environment, social interaction and life experiences all inform thinking and actions and knowledge of the world thus forming the social context. The social and cultural interaction is mediated by language.

This research seeks to find out what is the thinking language of creative artists and in particular dyslexic visual artists. David Pollak in *Dyslexia, the Self and Higher Education* (2005) discusses social constructionism as the 'self continually shaped and reshaped through interactions with others and involvement in social and cultural activities'. He takes the view that 'identity is not generated by the individual's sole efforts, but the self is continually shaped through interactions with others'; the cultural context is key to forming experience and behaviour with language central to this construct (Pollak, 2005,

pp. xvi and 25). Thus those within educational systems have long recognised that learning is a construct of knowledge derived from social interactions.

1.3 The educational background for the dyslexic person

All the artists within this research have experience of arts education where they could engage in one-to-one critiques, be part of a studio practice ethos and produce concepts by visual means and hence be part of learning and assessment that were connected to their way of thinking and producing. The artists who are dyslexic have often been assessed as part of that educational process. This assessment includes visual testing (see p. 27); however, during life, and in particular within the educational journey, there has been a reliance on the testing of particular abilities. The preference for testing for ability has been consistent over several decades.

Since the 1944 Education Act there has been a reliance on particular types of intelligence testing, that has, to this day, shaped the learning destiny of many people. Notably, there was the eleven-plus. The eleven-plus was formed through the belief that intelligence could be measured accurately and tests were set up that scored children on particular intelligences. Tests based on number and memory decided whether a child should follow an academic or vocational route, i.e grammar or secondary modern school. The phrase 'secondary' (following the eleven-plus) suggested second class and many children were stamped with that psychological label for the duration of their learning life. With this label to overcome, and educational perceptions also to overcome, the route to university was a tough road to travel. With 10-20% of the population believed to have dyslexia (BDA, 2014) the incidence of dyslexic children not entering grammar school was potentially higher. By the 1970s the eleven-plus had been phased out in most geographical areas and the comprehensive system established.

In *Intelligence, The Psychometric View* (1992), Paul Kline notes that there are more tests for intelligence than for any other psychological variable and that they are often used in situations of prime importance for people such as jobs

or admission to an educational environment (Kline, 1992, p. 44). Kline talks about how intelligence is measured and the concerns that these tests measure only what intelligence tests measure. The terms traditionally used for standardised testing are:

Reliability	Correlation between scores over time
Validity	Measuring what the test claims to test
Concurrent validity	Correlation with another similar test taken at the same time
Predictive validity	Correlation with criteria set in the future (eleven plus)
Construct validity	All possible hypotheses concerning variables
Face validity	Appearance of the test
Norms	Sets of scores from samples of different populations

These tests are set to measure literacy and numeracy using the above terms to ensure reliability and validity, and can exclude large groups of people who do not fit within the prescribed test measurements. The tests set out to test ability not achievement. Memory is a key factor for any dyslexic person. Explicit memory and implicit memory are interesting in that to a dyslexic person the implicit is embedded and an important factor to any responses to the environment around them. Implicit memory will represent a variety of unconscious abilities, learning habits and skills. Explicit memory will be the conscious recognition of names, places, events and information.

For the dyslexic person this can be problematic as meaning and understanding are fundamental to depth of learning. Retrieval of information can be a real difficulty in the classroom. A dyslexic child can be either a receptor or expresser in terms of difficulty with information. Short term memory and information can be turned into long term memory if the teaching strategies in the classroom help to develop memory skills for greater meaning in learning (Curtis and O'Hagen, 2003, p. 36).

Historical testing of intelligence quotient (IQ) has been prescribed within a particular set of processes. The recognition that dyslexia does exist (from the 1950s) has seen a new development in approaches to testing ability, skills and IQ. Even as late as the 1990s dyslexic people were tested on observable ability, for example, the performance of ability in reading and writing (Frith, 1997 cited in Mortimore, 2004, p. 53). The Wechsler Adult Intelligence Scale-Revised (WAIS-R, 1981) was devised to quantitatively test a range of patterns of ability including visual memory, auditory and verbal memory. This testing now enabled the psychologist to observe discrepancies between skills, which might have been masked by a high functioning dyslexic person.

Further research in the 1990s showed that these discrepancies could disappear later in life. However, although the dyslexic person might find strategies to perform a given task the brain activity involved was still considered 'abnormal' (Paulesu et al, 1996, cited in Mortimore, 2004, p. 54). The context being that the neurological wiring of the brain stayed the same and dyslexia is with a person for life.

Real progress came in 1995 when Cynthia Klein developed a much more qualitative approach to the measurement of abilities and skills with in-depth diagnostic interview methods. Thus an individual package of support could be devised in negotiation with the student (Mortimore, 2004, p. 55). These developments in measuring the abilities and skills of dyslexic people were important as they recognised the existence of a visual spatial ability. The more quantitative methods such as the WAIS, which plots four index scores of verbal comprehension, working memory, perceptual organisation and processing speed, mean the index scores are revealed using methods to measure visual recognition and thinking (Grant, 2005, p. 33).

Mortimore notes that it is not uncommon for an educational psychologist's report to reveal dramatically superior scores in visual spatial non-verbal sub tests (Chasty, 1985 cited in Mortimore, 2004, p. 87). She notes that some of the traits are cited as a characteristic of dyslexia and an indicator of non-

verbal visual ability. For example traits such as: the rapid grasp of concepts; awareness of patterns: divergent thinking; multi-dimensional thinking; problem solving, and curiosity (Vail and Edwards, cited in Mortimore, 2004, p. 88).

However mainstream testing still continues with increased emphasis on exam-based results and scholastic assessment tests (SATs). These set out to measure learning and knowledge with a prescribed way of assessment which evidences that particular types of intelligence are of value. What does this mean for those who do not fit into this mainstream system and what does this mean for society when a substantial amount of people are potentially lost to the workforce? (see p. 258). Thus they might not be able to contribute to the intellectual capital of organisations, cultures and education (see Chapter 9). Howard Gardner in his book *Multiple Intelligences* (1983) discusses the one-dimensional view of cognitive assessments. He talks about the 'uniform view' with a set of facts that everyone knows.

'If your IQ is in excess of 130 you are admitted to educational programmes, if not there is no room or a place made available!' (1983, p. 4)

Against this background, this research sets out to investigate the nature of dyslexic thinking, to assess its potential value, and, in conclusion, goes on to argue that dyslexic abilities can be an integral part of an increasingly technological orientated, highly adaptive society. The cognitive approach to making sense of the inner and outer environments of the artists involved in this research is embedded in theoretical perspectives that recognise the ability to differentiate thinking in a variety of contexts and social constructs.

In her book *Dyslexia and Learning Style* (2004) Tilly Mortimore discusses the abilities of dyslexics. However she concedes that most information is conveyed in a verbal, linear way. The recognition of thinking in a different way is changing with the celebration of the visual thinking of dyslexic people in the work of Thomas West and the recent but now dormant Dyslexia Arts Trust.

Mortimore makes the point that there is no 'hard quantitative evidence for a strong and consistent link between dyslexia and creative visual thinking' (2004, pp. 80-81). This comment is interesting in that quantitative research is considered as belonging to a higher level than qualitative research, quantitative being based in scientific methodology and statistical analysis. Here Mortimore suggests that West does provide anecdotal evidence (West, 1991, cited in Mortimore, 2004) with narratives of dyslexic high functioning individuals such as Einstein where he draws conclusions about visual spatial thinking and technology with visual thinking becoming a primary way of analysing links and relationships.

Mortimore notes that West draws on this anecdotal evidence and evidence drawn from hemisphere theory and psychometric testing to state that visual spatial thinking is linked to dyslexia. She suggests that there is still a lack of reliable evidence to support the notion that people with dyslexia have superior visual spatial skills while conceding that West has brought value to the debate that dyslexic people might have a preference for a 'visually based cognitive style' (Mortimore, 2004, p. 88).

David Grant in his book *That's the way I think* (2005) also states that there is remarkably little research to examine the assumed link between dyslexia and creativity; 'I suspect it is this lack of research that has allowed the myth to develop that being dyslexic means you must be a creative visual thinker'. (2005, p. 57). The subsequent revisions in 2010 and 2017 of Grant's book make little change to his statements on lack of evidence. However the literature review, in this research, has found that there is a wide range of definitions of creativity leading to a consensus that creativity is defined by the perceptions of the collective or individual. It is the case that there are mutually agreed commonalities that communicate the basis of our understanding of what might constitute creativity.

Some of these commonalities are: the ability to conceptualise across disciplines, the ability to navigate complexities to bring a solution and the ability to make thinking links to innovative idea making. Thus the essence of creativity might be divergent thinking across a range of disciplines, bringing together conceptual and transformative meanings. This working definition is further discussed in Chapter 2, pages 34-35.

The literature review discusses dyslexia and the production of creative work that has links with visual spatial ability (see page 35). Following the literature review the stages of the fieldwork seek to find out if there is any link between creative visual thinking and dyslexia. The fieldwork investigates the possible phenomena of dyslexic multi-dimensional visual thinking.

Chapter 2: Literature and theoretical considerations

2.1 Introduction

This chapter explores the theoretical considerations of creativity, dyslexia and arts education. The purpose is to investigate the underpinning theoretical territory for the impact of dyslexia on thinking and creativity in the visual arts. The chapter starts by discussing the nature of creativity; it continues with theoretical considerations of creativity, visual language and thinking within the visual arts in mainstream education. This is an important contextual consideration because the fieldwork research investigates the thinking and creativity of dyslexic visual artists who are a product of mainstream higher education. There will be an exploration of creativity and dyslexia followed by discourses around the socio-cultural contexts of visual language with a specific emphasis on cognitive perspectives and social constructivist theories within arts education. These perspectives are referenced to theoretical and visual arts critical discourses that have informed the recognition of the visual arts as a language. The chapter explores why arts-based courses tend to bring value to the strengths of dyslexic learners and more specifically their visual arts practice. The chapter provides an analysis of the frameworks of meaning underpinning these topics; thus considering the impact of dyslexia on thinking and creativity in the visual arts, the patterns of thinking and the implications of mainstream educational provision within these contexts.

2.2 Review of the creative dyslexic practitioner in the visual arts

2.2.1 Creativity

The specific concept of 'creativity' dates back to the end of the 18th century and is linked to Romantic conceptions of artistic creativity. Darwin's evolutionary principles further influenced the thinking around creativity with the view that humans adapt and vary according to their environment; thus each person is different. Darwin's theory of the origins of man motivated Francis Galton (1822-1911), a scientist, to investigate individual differences in human abilities.

According to Galton, individuals vary greatly in their ability to adapt to any environment; thus genius level is so well adapted to any environment that they can attain eminence in any chosen domain, including those involving creativity (Simonton, 2011, pp. 8-19).

In the 1930s, to further understand the nature of creativity, Julius Bahle, a musicologist, sent poems to several European composers to request these be set to music (Gardner, 1973, pp. 280-283). The musicians were asked to intensely observe themselves during the act of composing. In doing so they tended to gravitate towards those poems, which provided an emotional understanding and produced a wide range of new and existing patterns combining different approaches to the melody production. However they did experience alternation between intuitive inspiration and deliberate rational construction during the creative process (Holtz, 2008). Interestingly, Howard Gardner, a social and developmental psychologist, states the notion that artistic creativity, at the highest level, is generalized and therefore difficult to describe in conceptual forms.

In *The arts and human development: a psychological study of the artistic process* (1973, p. 317) Gardner discusses the skills involved in 'artistic creativity' that enable the individual to bring numerous perspectives to the process of creative thinking and creative production through the application of problem solving. He notes that this way of thinking transcends disciplines and domains. Gardner's analysis of the skills required for creativity finds that attempts to train divergent thinking can be misplaced. He discusses creativity as a product which is both innovative and influential to subsequent work in that field.

To Gardner the main thinking about creativity has been that it is the unique ability of an individual to problem solve, laterally-think and to have the ability for creative potential in any domain of knowledge (Gardner, 2006, p. 79). This thinking formed part of his theory of Multiple Intelligences (MI), which influenced teaching and learning from the 1980s in the US and the UK.

Edward De Bono explored 'thinking about thinking' and in his book *Why so Stupid?* discussed methods of lateral thinking and learning (2006).

He considered that there is a difference between artistic creativity of production and idea creativity. Hence his term 'lateral thinking' to describe the creativity of 'ideas thinking' concerned with changing perceptions, concepts and ideas. This in turn informed arts education (2006, p. 62). Lateral thinking is, in the main, recognised as the solving of problems through an indirect and creative approach, thus utilising initially non-obvious reasoning, and involving ideas not generated by a traditional step-by-step logic (see Glossary, p. 294). De Bono believes that the essence of creativity is the ability to self-organise patterns that have no symmetry. De Bono thought that we have failed to understand creativity and this is no surprise, as we do not understand the way the brain behaves. If this is understood then creativity is understood. The basis of lateral or divergent thinking is to open up the side-tracks from the main-tracks of thinking; to De Bono the side-tracks are suppressed by the mainstream. Yet creativity can arise from formal thinking if there is also the capacity to divert. Gardner furthers this position by stating that there has been a fundamental change in the way we think about creativity.

'The acid test for creativity is simply stated: has the domain in which you operate been significantly altered by your contribution? The good news: because there is no statute of limitations, you can never know for sure that you have not been creative.' (2006)

Margaret Boden (2004, p. 22) suggests 'that the widespread ability to recognise analogies has something to do with creativity' and it is misleading to see creativity as a capacity. It is not a single ability or talent any more than intelligence is. Creativity is about the ability to acknowledge concepts and make meaning across a range of disciplines. In mainstream systems this creative talent is recognized when endorsed by the experts in the field or those in education. In the *Creative Mind: Myths and Mechanisms* (2004) Boden looks at the concept of creativity from a range of perspectives.

She discusses the ways creativity can manifest itself and asks if scientific psychology can help us understand how creativity is possible? The question 'Just how creative is an idea?' can give an indication of the psychological processes of the thinking that brought the idea to mind. She also notes the wide range of creative manifestations that demonstrate a reach across every aspect of life not just within the visual arts. Boden suggests that everyone has the ability to be creative if grounded in perception, memory, and self-critique. She also suggests that creativity can happen in three main ways. The first being the new combinations of ideas, making unfamiliar combinations of familiar ideas, generated consciously or unconsciously. This way of creativity can, through creative associations, move across a range of disciplines such as poetry, visual arts and science.. The other two approaches involve exploration and the transformation of conceptual spaces in people's minds.

On exploration, Boden discusses structured styles of thinking that are conceptual spaces. To Boden this conceptual space is influenced by the culture a person inhabits, at times borrowed from other cultures. This means that the ideas are there already and can be developed and redeveloped, but that they are at times new in the 'exploratory sense'. She notes that this skill of creative exploration is part of art and design professional training from which creativity can happen. The transformation of conceptual spaces requires creative thinking that will change the exploratory maps inside our heads – will re-route fixed positions. Boden's definition of unique, deepest creativity is new thinking with respect to the conceptual spaces within our mind's eye. This new thinking is achieved by changes in pre-existing thinking style and understanding of how conceptual spaces can present themselves; by integrating unconscious and conscious analytical thinking (2004, pp. 1-20).

There are a wide range of discourses that seek to define and analyse creativity; some comment on the ability for divergent thinking while other discourses dwell on the numerous perspectives of the process of creative thinking.

This discussion has included several perspectives on creativity and interesting commonalities have emerged. These commonalities include recognition that creativity embraces divergent thinking and making meaning across a range of disciplines. So creativity is the ability to navigate complexity within a socio-cultural context, within our inner and outer environments, and to challenge domains of knowledge. Creativity can be part of all individuals' thinking through exploration, bringing together combinations of ideas, ultimately by integrating unconscious and conscious analytical and intuitive thinking. Therefore creativity, potentially, is owned by everyone, has no limitations and is intrinsically transformative. It is exploratory and conceptual in the following ways:

- Ability to conceptualise across disciplines
- To navigate complexities to bring a solution
- The ability to make links
- To be able to innovate idea making

2.2.2 Dyslexia and creativity

The research of Dr Beverley Steffert sought to show that in the production of creative work there is a link between visual spatial ability, dyslexia and thinking. She discusses the concept of 'design minds' capable of 3D thinking as a tool for spatial learning that involves the intuitive grasp of complex situations and systems. Steffert notes the works of Jerome Bruner and Edward de Bono in their investigations around play and fantasy which demonstrates children's abilities to suspend reality and perceive obstacles as fun to be explored and investigated; to allow the mind to flow consciously and unconsciously (Steffert, 1999, p. 43).

'The simultaneous processing of concepts with inductive reasoning and active use of imagery is the idea generation. Prizing the goal is the enemy of creativity. When those who would promote change are perceived as outside the pale by a security and productivity conscious organisation, solutions for coping with the uncertain and new are limited.' (1999, p. 47)

In her paper 'The Science of Creativity: neuroaesthetics' (2010) Steffert discusses creativity and dyslexia within a 'neuroaesthetic' context, this being the neuroscience of how the brain works in a creative way to produce aesthetic judgments (see Glossary, p. 294). She discusses the need for a range of interactions that affect the act of creativity, i.e. neurochemistry, the function of the brain with memory, motor skills and personality. Steffert concentrates on the neural processes of the brain and how this might affect thinking and subsequently creativity. The extremes of processing in autism and dyslexia called 'Minicolumnopathy' give a practical understanding of the differences in neural thinking patterns (see Glossary, p. 294). These minicolumns are genetically determined and are the smallest processing units in the brain. In an autistic brain they are thinner and closer together than in a dyslexic brain where they are fewer but wider. Interestingly these minicolumns are linked to the white matter of the brain and thus with any reduction of minicolumns this means less detail of representation and a greater ability to see patterns multi-dimensionally. The dyslexic minicolumns are wider, and fewer, hence the ability to generalise concepts. The dyslexic's wider perspective is in contrast to the autistic speed and detail of the closer local network and has a longer range and global network.

'The sparser connections will have a longer range but will take longer to connect. With fewer connections this means a less detailed representation of information the longer fibre can account for the greater capacity to see patterns that are linked in visual thinking but also slower in school learning' (Steffert, cited in Alexander- Passe, 2010, p. 194)

Steffert's explanation of visual thinking gives a neuroscientific context to how people are differently wired and provides a logical scientific reasoning for differences in thinking. She sums up by saying that as dyslexics have the neural processes, they are able to be more creative in the visual spatial sense due to greater cognitive flexibility.

In 2007, a three-day conference at Bath University called 'The Cascade' investigated the nature of creativity across science, art, dyslexia and education through a collection of 15 papers exploring visual and verbal communication. In his paper 'Marking the Visual' (Cascade Conference, 2007, p. 56) Ian Padgett talks about the research of Steffert et al at Central St Martins College, which evaluated the cognitive thinking styles of 360 arts students.

Through neurofeedback, (using scanning equipment called an electroencephalogram) Steffert showed test evidence that dyslexic people are able to hone into visual spatial ability (Westwood, 2017). Thirty years on from De Bono, the ability for adaptive lateral thinking is now being linked to the neural chemistry of the brain. Padgett talks about the dominance of the linear cognitive style necessary for reading and writing text-based information, which is now moving towards holistic communication. He notes that many individuals have developed coping strategies to circumnavigate socio-cultural linear requirements:

'As we progress further into this new century, my opinion is that the pressure from all directions will support a move towards holistic communication and a redefinition of expressive response, both in the workplace and in leisure'
(Padgett, 2007, p. 57)

Jane Graves, writing in her paper 'Dance, desire and dyslexia - random thoughts on creativity' (2007, p. 44), discusses the ability of dyslexic artists to 'watch their own cinema' and therefore to have easy access to their own creativity. She cites a student she worked with who would travel on public transport with his eyes shut. This enabled him to rotate images in his mind and integrate them into a structure of his own thinking. The really interesting point Graves makes is that this thinking style might be the thinking style of many people, yet they have learnt to keep quiet about it. They keep quiet because it is easier to avoid being labelled and therefore seen as different, not fitting in.

They march to a different tune to that of mainstream society and by doing this they develop strength of character to navigate mainstream systems and through this process unlock conceptual thinking (2007 p. 44). This position articulated by Graves fits in with my own experience of dyslexia (see pp. 303-305) and is debated more fully in Chapter 9.

Neil Alexander-Passe, teacher and campaigner, comments that the creativity of dyslexics is in their visual thinking which enables them to see past old notions 'to make discoveries that are initially elusive, then obvious to all' (2010, p. 200). Alexander-Passe has edited a series of essays that provide a range of narratives on *Dyslexia and Creativity* (2010). In the introduction, he discusses the definitions of creativity and the general recognition that creativity is often associated with art and literature (2010, p.x) originality being considered a demonstration of creative ability. However he concludes that there has been no single authoritative definition of creativity or a way of measuring creativity that is not dependent on personal judgment. He further notes that both creativity and dyslexia might deal with unconventional cognition.

Steffert suggests that artists can organize their sensory, perceptual, conceptual and emotional images into their chosen medium, yet in the visual arts creativity does not just come from the creator but from the viewer (Alexander-Passe et al, 2010, p. 183). Thomas West discusses the concept of creativity and dyslexia in his paper 'So near the discovery: on not falling back into old and preconceived notions' (2010). West, the author of *In the Mind's Eye* (1991) and *Thinking like Einstein* (2004), observes that the viewer is part of the creative process, however experts can be stuck within fixed notions and therefore not see new emerging patterns of thinking (2010, p. 200). This is an interesting observation, as according to Gardner, these experts are often the very people by whom innovative thinking is endorsed. Thus creativity is recognised as of value when the experts within the mainstream field provide endorsement. West highlights the important role visual thinking dyslexics might have to play in seeing past old notions:

'to see what others cannot see - to make discoveries that were initially elusive, then obvious to all' (West cited in Gardner, 2006, p. 81).

Another way of looking at dyslexia and creativity is discussed in David Grant's conference paper, 'That's the Way I think: Dyslexia and Creativity' (2001) which suggests that dyslexics are not necessarily more creative, but that their information processing deficits mean they are more tolerant of ambiguity. This ambiguity enables them to be more accepting of unusual juxtapositions of information and ideas. This is also possible for non-dyslexics, however Grant, an educational psychologist, suggests that this happens in a more frequently random way with dyslexia due to the multiple cognitive deficits and the limit on the number of ideas held in conscious auditory thought. Ideas slip in and out in what can be a random manner resulting in often-chaotic experiences, like an on-going brainstorming session. Grant suggests that, in addition, there can be high levels of abstract reason functioning at a fast rate with incoming visual information. The limited capacity of auditory working memory may also force a reliance on other sensory memories such as visual, tactile, auditory, and kinaesthetic (2001, pp. 4-7). The dyslexic person is therefore creative in working to strengths representing visual, oral and aural ideas in different ways. The randomness of going off tangent might be a positive factor in reaching creative solutions with the associations of 'being dyslexic and being creative' (Grant, 2001, p. 1).

In *That's the Way I Think* (2005, 2010 and 2017) Grant sets out to define creativity as a basic human trait linked to finding original solutions that are effective. Grant notes that there is very little research that has examined the link between being dyslexic and being creative. His thesis is that there are fewer barriers to study for dyslexic students on art and design courses where they can work to their strengths utilising a range of thinking to production approaches. Hence the journey to discovery, which can entirely transform a previous perspective, a journey Howard West talks about later in this review (1991, p. 43).

Jane Graves taught cultural studies at Central Saint Martins for 29 years and then became a dyslexia tutor; during this time she found the approaches of dyslexic artists fascinating. For example, the ability to see the whole concept, from beginning to end, in absolute detail 'the need to grip hold of first ideas and record in whatever way possible' (Graves cited in Alexander-Passe, 2010 p. 170). The day she really understood the ability for 'visual-spatial thinking' was when a fashion student explained to her how he solved the problem of pattern cutting. Instead of thinking in two dimensions to three he imagined the garment on the human being and cut and laid out in the patterns of his mind. Jane Graves shared this information with other teaching staff at St Martins, with the effect of transforming teaching in that fashion studio, with a teaching concept of recognising ideas intuitively rather than always relying on explanations in words. Graves discusses Sue Parkinson, of the Arts Dyslexia Trust (ADT), who explains visual spatial capacity in arts studio practice as being the capacity to judge visual information as a whole, to change viewpoints in one's mind and to assess the balance of all elements in the picture presented (Graves, cited in Alexander et al, 2010, p. 169).

In her paper 'Approaching Dyslexia sideways is it a blessing or a Curse?' (2010), Graves concludes by saying she now believes that 'dyslexics do not learn through rules but through concrete, often visual examples'. She discusses creativity as being about reflection, with the ability to 'stand and stare; even boredom is central to creative production'. Graves comments on a mainstream education system that tends to extend weakness through linear teaching methods with students conditioned to ignore their strengths. Rather, students need to play to their strengths and develop their visual-spatial thinking. She further comments on the ' lucky ' dyslexic students who reach the art school system while the 'unlucky' dyslexics fall into jobs that require systematic skills or even drift into prison (Graves, cited in Alexander-Passe, 2010, pp. 171-172).

2.3 The emergent socio-cultural impact of visual language

By the 1970s ways of seeing were being linked to mass culture. John Berger looked at the way Western culture is interpreted through visual images. His book *Ways of Seeing* (1972) influenced mainstream and alternative culture to reframe the concepts of visual language that penetrate mass media in a society saturated with visual images. Discussing the images we often process subconsciously, Berger reframes the ideas, attitudes, or activities that are shared by most people and regarded as normal or conventional: '*In no other form of society in history has there been such a concentration of images, such a density of visual messages*' (1972, p. 129).

The emergence of Berger's debate on ways of seeing was in itself a product of mass media and visual language. 'The medium is the message' (McLuhan, M. 1964) was a pivotal notion in the 1970s among liberal thinkers in the arts, education and social sciences, challenging mainstream assumptions on how we visualise our surroundings. Through a television series and then the book, Berger explored layers of meaning in terms of a visual language. To make the point, Berger and colleagues produced the book *Ways of Seeing* as a series of essays that were both text-based and image-based. Writing this book with four other academic colleagues Sven Bloomberg, Chris Fox, Michael Dibb and Richard Hollis, the text was an exercise in creative collaboration to understand layers of visual meaning, to contextualize visual language and thinking within the mass media.

Four of the essays used words and three used only images. The image-based essays were intended to raise as many questions as the text-based essays. The essays could be read in any order, the purpose was for the viewer to gather the ideas presented as a process of questioning about the language of images. The book's presentation invited the visual reader to understand the conceptual meanings within their own way of seeing. Thus the book is non-sequential with no set instructions on visual reading.

This recognition of the value and impact of the visual image can be a haven of meaning for the dyslexic mind. In recognition this research is presented in part as text and in part as a visual analysis of the investigation (see pp. 364-380). The visual record of two research exhibitions 'Ways of Thinking' and 'Ways of Thinking 2' have sought to investigate the cognitive process of production for dyslexic visual artists (see Figs. 7-11, pp. 135-139 and Figs.13-24, pp. 146-153).

Over 40 years ago, Berger talked about the density and pace of visual images. Earlier in 1928, Kandinsky had talked about the 'tempo of time' that had increased in speed (Kandinsky, 1979, p.14). In 1936, Walter Benjamin discussed the values of technology in *The Work of Art in the Age of Mechanical Reproduction* (2008). In disciplines such as lithography, photography and film, Benjamin explored technologies that enable reproduction to impact on our visual perception. These were the emergent reprographic disciplines at that time and Benjamin's discussion on perception remains as valid today.

Graves cites Benjamin when she talks about the process of assimilation as a process of reflection within creativity (Graves cited in Alexander-Passe 2010, p. 171). In his reflective analysis, Benjamin discusses technology that allows a mass society to see value in reproduction as we apprehend objects in pictures through our own ways of perceiving (Benjamin, 2008, pp. 9 -11). In recent years technology, through the Internet and social media, has now opened immediate access to visual communications as a way of perceiving mass society. Technology has again shifted our ways of seeing; now no longer is the debate about the incremental power of visual images and the impact on our individual and collective thinking. Visual images are now integrated into a multi-layered experience drawing on time, space, sound, and movement as an integral part of our visual communications.

For Berger, the debate was about an emergent Post Modernist, historical and social comment on visual language (1972). Part of the debate was to discuss the elements essential to visual thinking; first as a challenge to visual production, second as a challenge to the way we interpret our inner and outer environments. These discourses on the nature of visual language were the start of a growing recognition of the impact of visual imagery. Berger interprets creativity through a dialogue about seeing. 'Soon after we see, we are aware that we can also be seen. The eye of the other combines with our own eye to make it fully credible that we are part of the visible world'. (1972, p. 9). The way we see things is affected by what we know or believe. Berger linked visual language and human behaviour to a global first language at birth. This is a concept that has now become part of an academic dialogue, for example, Steffert debated the essence of creativity resulting from creator and viewer responses (2010, p. 183). Thomas West expanded on this discourse in his discussion about the importance of technology for dyslexic thinking (West, 1991, p. 251) and Gardner discussed the usefulness of technology in communicating creative innovation (2006, pp. 90-91).

New ideas, concepts and creativity have emerged through access to knowledge and education via the internet and new smart technologies. In *The Mind's Eye* West discusses the changing systems of organisation due to technology; the potential available to creative visual thinkers and the inherent flexibility of the personal computer. The computer has now provided a flexibility that is the reverse of mainstream education's mass-production orientation; 'effective self-education requires easy access to information' (1991, p. 252). Since 2000 there has been innovation that has spawned a technology capable of massive amounts of visual information on a range of virtual platforms. Gardner talks about how 'those hooked on creative activity will use computers' to yield new works of visual art and music, commercial designs and scientific patterns. These new ideas can be based on self-organising patterns that are not fixed points of reference, but points of flow and realisation (Gardner, 2006, p. 101).

However West notes that the handling of vast amounts of computer data has started a new way of analysing data, that of the ' global structure of the field of variables' and ' the scientific visualisation' (1991, pp. 231-232). The machine is not conscious; it is the human being who has the creativity to design, for example, programmes to explore 'a given space' (Boden, 2004, p. 7). West considers original and effective problem-solving to be synonymous with creativity, in particular the areas concerning visual thinking, spatial ability and pattern recognition. These three terms he attributes to creativity and posits that they are closely related. Visual thinking recalls images and manipulates and transforms to abstract concepts. Spatial ability emphasises the three-dimensional and the cognitive ability to move around objects in the 'mind's eye'. Pattern recognition discerns similarities of form to make links of thinking (West, 1991, pp. 21- 22). West gives an example of Einstein's thinking processes, to illustrate the ability to use visual thinking (in a description by Einstein), where Einstein plays with images until arriving at the stage of seeking symbols to express ideas in terms of what can be communicated to others in the mainstream. To Einstein the central role of his thinking was visual (West, 1991, p. 33).

'One of the most interesting aspects of the visualisation movement, scientific or otherwise, is that there is an intriguing convergence of the work of groups that would on the surface seem poles apart' (West, 1991, p. 234).

In *Frames of Mind: The Theory of Multiple Intelligences* (1983), Gardner discusses the possibility of several different intelligences (see page 52), with visual thinking considered in terms of spatial intelligence. Interestingly Gardner does not talk about the possibility of a visual intelligence only spatial intelligence that can visualise rotation of images in space (Gardener cited in Dorn, 1999, p. 11). To Gardner this spatial intelligence is the ability to transform one element into another; to create mental visual images as spatial elements.

West comments that Gardner's observation of the uses of spatial intelligence includes 'sensitivity to lines of force displayed in a visual or spatial way' also seem pivotal in many of the most original scientific thinkers (West, 1991, p. 29).

Therefore it could be the case that those who have this affinity with visual and spatial thinking deal in a shared knowledge that reaches across disciplines and expertise. Gardner notes that this way of thinking has a preoccupation with 'wholes rather than parts, with patterns rather than pieces, with similarities rather than difference'. West, who believes that sensitivity to patterns, forms and the whole seems to be a recurrent theme amongst visual thinkers, provides further support (West, 1991, p. 39). Visual thinkers and creative dyslexics might share patterns that are limitless in variety and indeed limitless in thinking. West discusses the 'mind's eye' as being the visual thinking of the dyslexic person to visualise within the mind (1991, p. 40).

'After some four hundred to five hundred years of growth in a highly verbally orientated system of education and knowledge, we may be seeing the beginning of a new phase in which, in reverse fashion, certain kinds of complex information will be increasingly handled visually rather than verbally' (West, 1991, p. 243).

Jane Graves in her paper 'Make Dyslexia your friend not your enemy' discusses the differences between semiotic thinking and symbolic thinking (Graves cited in Steffert et al, 1999, p. 50). Semiotic thinking is meaning established through a set of sequences recollecting previous information in order to understand the next piece of information. This is hard for those with poor short-term memory and with sequencing difficulties. Graves in this paper states that the unconscious element of problem solving in art and design is more 'illuminating' than the earlier discussions on lateral thinking led by De Bono (Graves 1996, pp. 3 - 4). She talks about Rhawn Joseph's paper 'The right brain and the unconscious' where he discusses the ability of right brain thinking to open up intuitive awareness of the unconscious element of art

and design. Thus she suggests that the art and design curriculum is more sympathetic to right brain thinking (Joseph 1988, cited in Graves, 1996). Graves explores visual language as a symbolic system with the capacity to translate from one language to another for meaning. In 'Dance, Desire and Dyslexia- Random thoughts on Creativity', Graves talks about the dyslexic artist who thinks in patterns to create a visual language of meaning based on semiotics (2007, p. 47). The capacity for anyone to have this visual-spatial language with the imagination to navigate conceptual spaces means there does not have to be a distinction between the dyslexic person and the non-dyslexic person. She describes government policy that differentiates the provision of education or excludes ways of providing education for these groups as 'brutally hard line' (2007, p. 48).

Certainly the capacity to have flowed thinking is a capacity for both dyslexic and non-dyslexic people yet the tendency for linear chronological frames of reference within mainstream education does not sit well with a dyslexic mind which, by definition, will have a short term memory capacity (see Chapter 1). Graves notes that a free association of thought can be a creative strategy to a dyslexic person, however it is also the case that educational constraints can stimulate creativity by this consistency of working to strengths (2007, p. 49).

Creative visual thinking, as a way of connecting thought from the brain to our environment, is a powerful mode of seeing and thinking. This research discusses thinking as a way of seeing. Visual thinking is different for different people, how they form and reform patterns of thinking and moments of clarity from experience - the 'light bulb moments' or 'spark moments'. We are now required to think faster and understand a complexity of meanings. This requires divergent thinking with faster ways of conveying messages that are accessible to a wide range of groups and peoples. The times are now different and technology is at the heart of this change. The visual thinking of artists, as evidenced in this research, could be part of this change, bringing additional cultural and intellectual capital to employment, education and training.

2.4 Theoretical considerations; visual arts and mainstream education

2.4.1 The theoretical perspectives underpinning visual arts education

Central to the studio-based practice within arts courses is the intensely personal experience linked to inquiry, exploration and experimentation i.e the way students represent their reality in relation to something else. This personalized experience links with 'Constructivism' a learning theory developed by Jean Piaget (1896-1980) rooted in personal endeavour constructed by the learner and owned by the learner. This model of learning also reflects Lev Vygotsky's theoretical understanding of 'learning activity theory' as something that occurs through social interaction where the role of the tutor is to facilitate through scaffolding information. Lev Vygotsky (1896-1934), a Soviet cognitive psychologist, suggested that adults were integral to the learning process of 'scaffolding' to reflect and go beyond immediate experience to produce new ideas. Vygotsky believed that in social groups the learner would have a greater understanding of the world; complex tasks could be undertaken with support and interaction, the quality of the interaction being crucial. Vygotsky suggested that nurture, how others change us, is part of our nature. His theories influenced the social/situational orientation to learning; 'Social Learning Theory' (Merriam and Caffarella, 2007, pp. 291- 297).

The realisation that our behaviour is a result of cognitive development is therefore rooted in the theoretical viewpoints of Piaget and Vygotsky. Both cognitive psychologists conducted research with young people and concurred that behaviour is the result of stages of cognitive thinking based upon active participation in one's own learning. However they differed in how this thinking is influenced. Piaget believed that learning happens through an interaction with the environment, whereas Vygotsky believed that learning is influenced by social mediation and the role of culture.

Vygotsky therefore took cognitive development theory further with a set of assumptions based on social interaction. For Piaget the role of social relationships in learning was not emphasised. He argued that children were egocentric and therefore governed by their own perceptions. By the 1960s

Piaget was becoming well known for his research into the abstract-logical aspects of mental life. Based within cognitive thinking, he considered that mental development could not be attained unless previous stages had been completed as a basic life function (Efland, 2002, pp. 30-33).

Piaget identified four stages of cognitive growth:

- 1) **Sensorimotor stage**; learning through feeling and touching.
Environment plays a key role in shaping ideas
- 2) **Preoperational**; actions are internalized and converted into images.
The representational stage happens with learning through the manipulation of observations and images; the ability to collect images and view the world from different perspectives.
- 3) **Concrete Operational**; the development of abstract symbolic powers; the development of inductive powers.
- 4) **Formal Operational**; the symbolic process becomes formal operations through representational logic (Curtis and O'Hagan, 2003, pp. 44-45).

Since Piaget there have been a number of theorists who have argued that he underestimated children's intellectual ability. Jerome Bruner, a psychologist at Harvard University, considered children as active learners needing first-hand experiences to help them develop their ideas. Influenced by cognitive theories, he argued that a hypothesis is about testing the validity of a statement and that learning is based upon prior experience: 'learning how to learn' (Bruner, 1960, p. 6).

Bruner considers that we develop these ideas in three ways:

- **Enactive representation**; the physical
- **Iconic representation**; series of images drawn from experience
- **Symbolic representation**; translating experiences into a symbolic form.
(Bruner, 1960, pp. 34-38)

Bruner and Vygotsky both suggest that learning is by a series of actions. Children cannot grow up in isolation and social groups are vital to their understanding of the world. These social actions become a series of thought processes for further development of the action demonstrating that we are responsible to each other for learning within a social construct (Dorn, 1999, pp. 64-65). Several theorists have investigated different ways of thinking such as analogy and representation as a set of structures to model thinking. In *Art and Cognition* (2002) Arthur Efland, an arts education scholar, discusses thinking in terms of visual language. He discusses the reorganisation of symbolic references within the brain, sourced from the outside world, so as to make changes and adapt; neural representations become images manipulated through the process called thought. For the Behaviourists, thinking was not a process of cognition but stimuli to be sourced from objects or events within environmental conditions.

By the 1950s the view of the root of behaviour had changed; this is shown through Benjamin Bloom's *The Taxonomy of Educational Objectives* (1956), which recognised that learning is cumulative and information is stored. Therefore by definition there needs to be a process by which information is recalled and transformed in conceptual understanding (Bloom cited in Efland, 2002, pp. 19-20). By the 1960s Piaget had become influential with theoretical views that emphasised cognitive development. This meant that development was now as important as learning, so changes in response were now dependent on the stage of development as well as the subject domain (Merriam and Caffarella, 2007, p. 285).

In 1960 Bruner added to this new emphasis on cognitive thinking by writing *The Process of Education* (1960). Now there was the possibility of growth through increased symbolic competence and hence 'any subject can be taught effectively in some intellectually honest form to any child at any stage of development' (Bruner, 1960, p. 33). Bruner believed that cognitive development could range across a wide variety of modes.

The act of learning would pass through three stages: 1), the acquisition of new information; 2), the transformation of new knowledge to fit new skills; and 3), the evaluation of knowledge by checking whether the information manipulated is adequate for the task (Bruner, 1960, p. 48).

Piaget and Vygotsky again differ on the ability to understand concepts, and hence on creativity. Piaget constructed his theory on the basis that we understand our environment through a series of symbolic representations of an actual world whereas Vygotsky considered that mind and consciousness are made possible by the acquisition of the tools of culture, especially language. However, both the symbol processing and sociocultural theories are considered cognitive constructivist theories. The reference to language is interesting as 'language' can mean a range of languages internalised and visualized. Vygotsky's theory of cognition gave an explanation of how existing knowledge can be internalised yet it did not give an explanation of how we create new 'Ways of thinking' (Efland, 2002, pp. 40-41) (see Appendix D, p. 303).

'What enables individuals to construct the not yet known, where imagination and intuition enable individuals to go beyond the information given? This is a crucial question in learning the arts because without it we encounter difficulties in accounting for the appearance of new developments in art. Vygotskian theory can account for new knowledge using the existing tools of culture, but it does not account for the creation of new tools' (Efland, 2002, p. 40).

Underpinning Efland's statement is an additional question; what are the patterns of thinking that enable the creation of new tools for creativity and new developments in art? This question is a useful signposting question for this research. Efland discusses the impact of Vygotskian theory on arts education; first, that arts education is not a study that should happen in isolation but should be seen within the social and cultural context of the discipline; second that cultural symbols and forms of language make culture happen; third that learning happens internally and externally through cultural knowledge.

Therefore creative practice is the result of thinking that is part of a person's own environment both internal and external (2002, pp. 37- 41). Thus the investigation of this research positions the theoretical perspective within the cognitive, experiential and social construct and investigates how information is visualised in the working memory as a product of our inner and outer environments.

Within psychology, researchers such as Albert Bandura look to interaction and cognitive processes. This is a social cognitive orientation where learners construct their own knowledge from experiences. This paved the way for a range of interconnecting and integrated theoretical perspectives informing educational provision (Merriam and Caffarella, 2007, pp. 287-289. See also Appendix B, p. 330).

2.4.2 The impact of cognitive perspectives on visual arts education

Where Behaviourists had looked to the environment, those drawing on Piaget turned to the individual's mental processes. They were concerned with cognition. The act or process of knowing intelligence was being defined as a basic life function that helped people to adapt to environment through the cognitive orientation to learning (Merriam and Caffarella, 2007, p. 285). Educators began to realise there could be other ways to assess intelligence and a stimulating environment could facilitate learning and intelligence. Now intelligence was not solely owned by psychologists, but also by educationalists and thinkers who were debating the breadth of intelligence. There was a realisation that there might be different types of intelligence. Philip Vernon (1905-87) Professor of Psychology of Education at the Institute of Education (IoE) became a critic of the concept that IQ stays constant; he realised that particular support for a test could significantly increase scores. He argued for non-selective comprehensive schools and against streaming. The assessment of intelligence has long been debated between psychologists, educationalists and thinkers. Traditionally there has been prevalence of testing in mainstream education but methods in arts education are more person-centred, notably self and peer assessment, and examination of portfolio (White, 2006, p. 77).

Gardner suggested that children enter the educational environment with profiles of intelligence already set in place and it is through a learner-centred curriculum that this might be cultivated. He claimed that these intelligences rarely operated independently, are concurrent and complement each other as individuals develop skills to solve problems. He argued that culture plays a large part in the definition and development of intelligence and how society values different types of intelligence. This therefore had implications on teaching in the classroom; it could be said that each learner possessed a range of intelligences that had to be considered in terms of learning needs and a broad range of talents and skills. By working to the strengths of these abilities the teacher could show the learner how to use and develop intelligence. Gardner's theory of multiple intelligences provided a theoretical foundation for recognising different abilities and talents of learners (Gardener cited in Brualdi, 1996).

Gardner's *Theory of multiple intelligences* (1983) was welcomed by educationalists as this perspective could fit within a wide range of theoretical thinking; cognitivist, humanist, social and situational and therefore could be conceptualised within a range of pedagogies and curriculum design. The seven intelligences he outlined meant that now there was a meaning underpinning the different ways of processing information and intellectual development:

- **Linguistic**; use of language in writing or orally
- **Logical/mathematical**; thinking that is deductive, classifies and categorises
- **Musical intelligence**; understanding concepts
- **Visual Spatial intelligence**; representing spatial information
- **Kinesthetic intelligence**; physical means to represent ideas and feelings
- **Interpersonal intelligence**; relating to others
- **Intrapersonal intelligence**; ability to understand oneself and have self discipline (Curtis and O' Hagan, 2003, p. 40).

John White discusses the nature of intelligence in his book *Intelligence, Destiny and Education* (2006). The point he makes is that practical intelligence is of considerable importance to the world, however, theoretical intelligence is of much greater importance, with the ability to conceptualise, have ideas and make innovation (2006, p. 75). Where does creative intelligence fit within this pluralist thinking? Gardner considers that creativity is more dependent on temperament and personality, although the ability to innovate requires some intelligence. In seeking to evidence whether visual creative thinking does exist, it is useful to consider the creative cognitive process. This theoretical discourse considers that dyslexic artists might have spatial creative intelligence and, as such, the ability to form a mental picture of the world using visual-spatial means. Gardner takes the view that artistic intelligence is the result of intertwined cognitive and affective elements and is not just based on competence in scientific-logical thinking (Gardner, 1983).

Thus the theoretical debate was moving on from Piaget, who considered that logical thinking was higher-level thinking than other types of intelligence or ways of thinking. To Piaget this logical thinking manifested itself in rational thinking that is understood through logical mathematical sequences of information (Efland, 2002, pp. 39 - 49). Gardner's theories influenced both US and UK secondary and post-secondary education. His seven intelligences recognised a visual spatial intelligence with the emphasis on the visual linked to the spatial. In *Five minds for the future* (2006) he discusses his attempt to break new ground by challenging the mainstream or consensual view of intelligence whilst reviewing what he means by creativity and its role in our working lives. To Gardner creativity had become the ability to think differently from the usual, to think through complex issues independently and devise new innovative ways to work. He links new thinking to the ability to access education, technology and global influences, and yet Gardner says that new thinking and preparation for global living is not taught so as to enable individuals to creatively thrive (2006, pp. 7-19).

Gardner readily cites leading visual artists as great innovators of their time with the ability to apply knowledge across disciplines. However, Gardner devotes little discussion to visual thinking and how this might manifest new thinking. He does talk about 'Embodiments without words' (Gardner, 2006, p. 49). Here he discusses the visual language of great artists that have powerful messages about social and political themes as a set of syntheses, the synthesis being the interpretation of components and elements put together from disparate places as new ways of thinking or seeing. Gardner tends to discuss the manifestations of visual thinking rather than the cognitive approaches to visual thinking; the narrative is based on the process of application. Instead Gardner talks about the differences between the act of synthesising and the act of creativity as two mental stances that have distinct impulses; the synthesiser's goal is to place what has already been established in the most useful form, the creator's goal is to extend knowledge in unanticipated directions.

It is interesting that Gardner also notes that history has shown that the 'hotter the creative centre the more rapidly it will extinguish itself' (Gardner, 2006. pp. 98-99). Gardner acknowledges the existence of creativity, is fascinated by the innovative creative process, and he recognises the concept of visual thinking. Yet in his writings he argues for a system by which thinking can be recognised and navigated. In this system he suggests a categorisation of intelligences thus setting in place a categorised system of thinking processes.

Gardner does issue a caveat when he notes future societies which nurture creativity are more likely to thrive; like West he links this vision with global technology (2006, pp. 99-101). Interestingly they both come to similar conclusions, although Gardner, from an academic and scientific psychological perspective, is conservative in his recognition of visual thinking or intelligence, while West, from a dyslexic perspective, expands on visual thinking as a gift to future generations with dyslexic people key to this way of constructing concepts.

Efland notes that cognitive perspectives have had an important impact on education and particularly within the arts as a process of re-framing teaching and learning. These perspectives recognise cognitive thinking rather than thinking placed in an 'affective' paradigm. Therefore learning-based cognitive thinking processes now meant that the visual arts were indeed part of conceptual intellectual thinking (2002, p. 21) Efland considered that patterns of thinking did not necessarily reside within a particular medium but could range across many media. In support of an 'integrated constructivist theory' Efland makes the following statement about arts education:

'The principal effect of an integrated viewpoint would be seen in educational activities where symbolic forms of the arts would be more closely linked to everyday life, (2002, p. 79).

Experiential learning was still core to any art and design curriculum. From the 1960s mainstream teaching and curriculum development focused on experience-based learning based on cognitive development theory (Kolb, 1984, pp. 12-13). Critical analysis and problem solving underpinned this development. The Coldstream report introduced theoretical viewpoints to bring about an academic interpretation of the visual arts (1960). This was to ensure academic credibility in a practice-based vocational discipline. By 1970 Coldstream had produced another report, 'The structure of Art and Design Education'. The purpose was to value the art and design skill set within the national economy, thus emphasising employability and skills within the visual arts as part of an inter-disciplinary curriculum in higher education provision.

For the Art and Design curriculum this integrated approach to cognitive learning was influential. Art and Design courses have maintained experiential teaching and learning philosophies with an emphasis on investigation, diagnostic learning and problem solving as key to the curriculum. The integrated approach to curriculum was a discussion Bruner had engaged with in 1960 in *The Process of Education*.

Here he discussed cognitive theory that underpins the concept of a spiral curriculum, a curriculum that is so adaptable and flexible that any person can engage in intellectual development and thus the act of learning:

'We begin with the hypothesis that any subject can be taught in some intellectually honest form to any child at any stage of development' (1960, p. 33).

Bruner suggests that learning happens if the curriculum is structured in such a way as to be understood by all abilities. The spiral curriculum allows the person to revisit the subject area and by doing so learning becomes richer and more complex as we start to understand at greater depth. In *The Process of Education*, Bruner introduced this idea by describing how intuitive learning can be when allowed to range across disciplines (1960, p. 38). With each visit more is explored, deepening learning toward new searches for new conceptual meanings; thus new and old learning spirals together to reinforce knowledge. Bruner's Spiral Curriculum allows non-linear movement to build up understanding and knowledge of increasingly complex ideas. Here Bruner was influenced by Vygotsky in that he emphasised the social nature of learning and the zone of proximal development. Bruner believed that cognitive skills were integrated throughout our development. He recognised that visual symbolic representation was crucial to cognitive development (Bruner, 1960. pp. 81-88).

2.4.3 Moving towards an integrated approach to cognition

Mainstream education has an impact on us from a very young age, so what are the patterns of thinking that underpin theoretical views of mainstream education? Within the mainstream there is the novice-expert paradigm. The result of this paradigm is a set series of thinking patterns based on simple and complex problem-solving linked to backwards and forward thinking. Backwards thinking is goal-setting that includes sub-goals to reach the end action; this as a series of actions is linked to the acquisition of skills and information. Forward thinking can be linked to complex problem solving as a

general pool of knowledge that is expert. This is to enable forward thinking that has set structures but the ability to solve problems through a checklist drawn from knowledge; thus evaluation. The ability to have a representation of the modelling of thinking is forward thinking. Evaluation enables the leap from novice to expert, and the ability to set up a series of checklists to evaluate thinking. Within this paradigm of continual evaluation, several theorists, specifically Ohlsson, investigated different ways of thinking such as analogy or representational thinking as a set of structures that re-encode and change the situation (Ohlsson cited in Green and Gilhooly, 2005, p. 361). The expert versus novice paradigm is consistent within much of education, whether adversarial or non-adversarial; the adversarial being the ability to think out the position of the opponent, with non-adversarial being the ability to think without consideration of any opponent thinking position. It is the continuous forward thinking element of this theoretical perspective that this research seeks to investigate in collaboration with other artists, irrespective of this adversarial or non-adversarial dynamic (Green and Gilhooly, 2005, pp. 347-377).

The dynamic of how the dyslexic visual practitioner might reason, make judgments and make decisions, either alone or in collaboration, is one this research sets out to investigate. In *Mind in Art; Cognitive foundations in Art Education* (1999), Charles Dorn talks about art as an intellectual process that improves cognitive abilities; yet he questions how this can be measured. He cites Efland's viewpoint that all learning requires strategies to assemble knowledge and perspectives on the learning problem, yet with art there can be little obvious structure so it requires networks of concepts to access interrelationships of key phenomena (Efland cited in Dorn, 1999, p. 2). Thus art needs thinking that will connect and link across concepts and ideas and not necessarily in any sequence. So arts education has had an interesting conundrum; to be part of the mainstream it has to be part of curricula that can be assessed, yet the thinking to produce art is flexible and fluid to access conceptual meaning.

Therefore, Dorn, an arts educator, talks about a reductive approach in mainstream arts education that separates cognitive abilities from the senses, divides them into qualitative and quantitative and separates from affective influences influenced by or resulting from the emotions (Dorn, 1999, pp. 9-11).

To counterbalance this Efland proposes that there should be an integrated approach to cognition in arts education. This would integrate meaning, making and understanding as the underpinning principles, thus moving the theoretical viewpoint forward to recognise that ways of thinking are a result of the internalisation of knowledge, social cultural interaction and the cultural identity of the creative practitioner. This thinking emphasises a shift toward structures of knowledge through concepts created by the mind, thereby resulting in three different orientations of cognitive constructivist thinking:

- Symbol processing; a view of the symbol as an entity (numbers, words),
- Sociocultural; reality as a social construct
- Conceptual construction of the person's own views of reality; integrated meaning making.

This integrated view emphasises that reality is a construction of a person's own through their experience and is a construct of perceptions and knowledge. Thus a person is guided by personal effort, interest and experience, including the cultural context in which that person will navigate their own thinking (Efland, 1999, pp. 78-79). This integrated cognitive approach is an approach this research sets out to investigate.

Chapter 3: Introduction to the methodology

3.1 The theoretical position of this qualitative, mixed method research

As discussed in Chapter 2, the investigation of this research is positioned within cognitive and social constructivist perspectives with reference to experiential and social learning theory. Central to visual arts education is the concept of cognitive learning through experience. This research seeks to find out 'What are the thinking approaches of visual artists and specifically dyslexic visual artists?' The approach is to investigate the way dyslexic and non-dyslexic visual artists relate to inner and outer environments through visual thinking to production. The research uses a mixed method approach informed by a range of theoretical perspectives that underpin this qualitative action research.

The research is embedded within the origins of experiential learning with the recognition that learning and development are lifelong processes towards self-purpose and self-direction. John Dewey and Kurt Lewin (social psychologists) are considered the ancestors of experiential learning methodology and personal experiential learning (Kolb, 1984, p. 20). As noted Piaget and Vygotsky investigated the learning process by observing the development of children, how children assimilate experience into concepts, to then accommodate those concepts to experience (see Chapter 2).

By definition qualitative research, including action research, is a reflective process of progressive problem solving by individuals working in teams or as part of a community of practice to improve the way they address issues and solve problems. This process is a cycle that feeds into other change-making processes starting with, a), a series of planning actions moving to, b), the action of transformation to, c), the third stage as output or results. The 'Lewinian Experiential Learning Model' includes social learning and problem-solving processes with the aim of generating action research to integrate observation and action. The main components of experiential learning are concrete experience, observations, reflection, concepts and testing the implications of the concepts in new situations.

Dewey's model is similar, however, this includes more explicit reference to the developmental nature of learning. Lewin constructed a theoretical model that gave credit to action research as a form of enquiry. The Lewin cyclical model of action research is described as: analysis, fact-finding, conceptualization, planning, implementation and evaluation of action. The Dewey developmental nature model of learning includes 'how learning transforms impulses, feelings and desires of concrete experience into higher-order purposeful action' (Kolb, 1984, p. 22). Lewin argued the importance of the collective in bringing social changes thus creating opportunities for people to examine deeper meanings that differentiate serious concerns from transient reaction (Kemmis and McTaggart, 2007 p. 287). This earlier concept of action research was as an inductive procedure with researchers learning whilst in practice, later becoming more socio-culturally aware. James McKernan, a Dublin academic, discusses action research as critical-emancipatory educational action research:

'this stresses that research practitioners are equipped with discursive, analytical and conceptual skills so that they may be free of the control of positivism, as a quantitative method, through their communities of self-reflective understanding' (1996, p. 25).

An underpinning element is the idea that critical action research is seen as a politically empowering process for participants that might result in a more just and democratic form of education. More recently Kemmis and McTaggart discuss the spiral model of action research, which includes: social process, participatory, collaboration, emancipatory, critical, reflexive and linking theory and practice (Kemmis and McTaggart, 2007, pp. 280-283). Kemmis and McTaggart note that for many researchers the spiral cycle of self-reflection becomes a dominant feature of action research. The spiral model of action research includes practical and collaborative elements that link others with the interaction of the research. The emancipatory element seeks to explore the ways in which practices are shaped and constrained by wider social structures.

The critical element seeks to contest irrational and unproductive ways of working. The reflexive element seeks to 'change practice through a spiral of cycles of critical and self critical action and reflection' (2007, p. 282).

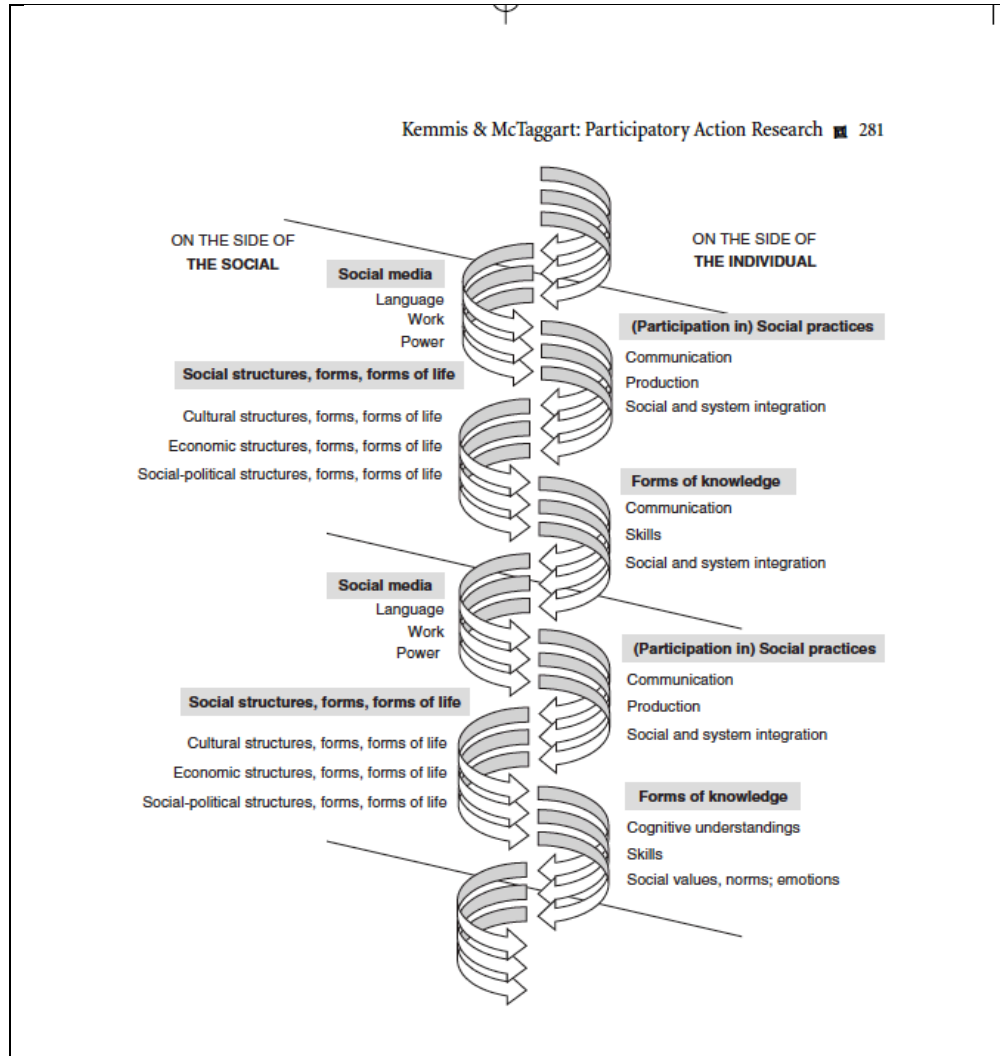


Fig. 1. Action research spiral methodology

(Kemmis and McTaggart, 2007, pp. 280-283)

These theoretical perspectives and learning models have informed this research as an active investigation process. The intention is to examine the feedback from the case study artists, the survey participants and the interviewees within the circumstances of creative production. The baseline process with stage one of the research is to understand the creative perspective of dyslexic artists to analyse any change in this perspective.

As a comparative analysis this then informs stages two and three which include both non-dyslexic and dyslexic artists. The stages of the fieldwork investigate the creative perspective of dyslexic and non-dyslexic visual artists. The reliability and the validity of the data was analysed through interpretative coding methods to understand any change in perspective and thinking. The sampling was purposive or qualitative in order to select participants specifically rather than randomly. The sample approach was to achieve representativeness and comparability so as to investigate the phenomena of multi-dimensional thinking in two groups of selected visual artists. Thus the sample size addresses the specific purposes related to the research questions. This sampling was typically small, at usually 30 cases or less, as the focus was on the depth of information generated by the participants throughout the three stages of the fieldwork (Teddlie and Fen Yu, 2009, p. 84).

The methodological triangulation of this research includes interviews, observational data and practice and survey questionnaires. Through a process of 'iterative overlaying' the analysis provides a definitive and objective explanation of emergent and different perspectives, thus allowing for both discovery and a wider picture, and also allowing qualitative and statistical data to be combined. In her essay 'Mixing methods in a qualitatively-driven way' (2006), Mason talks about the value of a mixed-method approach for researching questions about social experience and lived realities. Mason goes on to say that this approach can offer 'enormous potential for generating new ways of understanding complexities and contexts of social experience'. Given that the present research is positioned within a cognitive constructivist perspective this argument can be moved forward to include cognitive processes that are the result of inner and outer environments. Mason notes that the mixed-method approach is a starting point for a way 'of transcending boundaries rather than reinforcing them' (2006, p. 10):

'If we are to think outside the box, then the methodological creativity should extend to other dimensions-for example, with visual thinking which is grounded in and interested in dimensions other than talk or text'. (2006, p. 13)

Primarily, my own research has an ethnographic, phenomenological and interpretative perspective based within participatory action research for stage one of the fieldwork. The four case study participants (Stage one) had a voice through interviews, group discussion and the exhibition work. This was a collaborative and shared experience with the researcher, who was one of the case study artists. This process informed the development of the next stage of the fieldwork research, namely the online survey. The case study participants had a direct experience of their own creative practice. These discourses and the two exhibitions informed the next investigative research process, which was the survey questionnaire.

The interpretive element of the research is embedded within stages two and three of the investigation, which aimed to gain a better understanding of the nature of cognition. The interpretive approach worked with the transcripts of the semi-structured interviews for the purpose of providing the participants with an opportunity to share experiences. The themes drawn from the analysis were integrated during the later stages of the research (Willig, 2010, pp. 56-57). This investigation, qualitative in approach, values the narrative and creative position of the participants. Therefore the research tools used to capture the artists' thinking, and to evidence this thinking, were identified in dialogue with them; these were films, two case study collaborative exhibitions, visual word clouds, coded analysis, surveys, audio recordings, text-based transcriptions of the interviews, and photography. The statistical tool was a Lickert Scale introduced for the semi-structured interview stage (see Appendix E, p. 304).

3.2 The research rationale and focus

The research focus is positioned within cognitive and experiential theoretical perspectives and underpins the methodology. The rationale of the action research 'mixed methods' approach is to be inclusive of different subjective and objective perspectives, ethnographic and phenomenological. The analysis of the research is positioned within a critical, interpretative and participatory paradigm, with the fieldwork fitting into a definition of methodological

triangulation as a way of corroborating the data as a 'true' understanding of the terrain (Mason, 2006).

The participatory paradigm (see Glossary, p. 295) is as a critical element seeking 'to bring together the self-reflective collective and self-study of practice' (Kemmis and McTaggart, 2007, p. 273). The participatory element of the research is based within stage one of the research and seeks to share dyslexic knowledge and practice evidenced in the case study exhibitions. The interpretative element aims to gain a better understanding of the thinking to practice as presented, and to explore the participant's experience, dyslexic or non-dyslexic, from his or her perspective. This approach 'recognises the researcher's own view of the world as well as the nature of the interaction between the researcher and the participant' (Willig, 2010, p. 56).

Interpretative and participatory paradigm

The investigation is empirical and participatory and hence the range of fieldwork data to investigate the gap in knowledge about the nature and implications of dyslexic creative thinking in the visual arts. An element of the research is actual creative practice that has been informed by the research enquiry. The creative production of the artists is key to the focus that the research seeks to investigate.

Participatory action research engages with people to examine knowledge. By definition participatory action research is conducted by people on themselves or within the collective, it is not research done on others who are not within that collective of shared knowledge (Kemmis and McTaggart, 2007, p. 281).

Interpretative phenomenological analysis is concerned with gaining a better understanding of individual experiences and the nature of the phenomena being studied. As a process of analysis this approach utilised semi-structured interviews. The questions were therefore open-ended to ensure the experiences were understood from the participant's perspective. The analysis is in stages, with the transcription of the interview read by the researcher to use 'open coding' in note form to document themes that characterise each section of the transcription.

The next stage is to structure these emergent themes, through a listing of themes, coded and linked to sections of the transcriptions. The analysis can be summarised from a template of coding to highlight the key themes from the fieldwork (Willig, 2010, pp. 56-58).

Part of this research is a creative practice enquiry that is a reflective critical analysis of the researcher's own practice as a dyslexic artist within a collaborative participatory approach. The participatory case study element was scoped, through interviews, exhibitions and a series of thinking positions which informed the questions on the survey at stage two. From the second stage to the third stage, the research was rooted in an interpretative analysis of data, developing an iterative approach that was not static or confining. Thus a set of questions and themes were investigated through various research tools and throughout the life of the research (Willig, 2010, p. 21). This provided a framework from which to analyse and interpret responses, and to review development throughout the investigation.

The phenomenological context

To begin the process of the fieldwork, I wanted to understand the subjective experiences and interpretations of the world for dyslexic visual artists (Willig, 2010, p. 13). Therefore I started to research my own way of thinking through dialogue and mind mapping. The template for the matrix originated from this thinking (see Fig 2. p. 88). The matrix identified routes of thinking that incorporated action, reflection, analysis, awareness of meaning, and mapping of concepts to understand subjective and objective experiences. This matrix was given to each of the case study artists to be a starting point for mapping their own thinking processes whilst in creative production. The purpose was to have a structure by which evidence could be captured for the actual creative practice. It was proposed that each practitioner would have a series of transparent overlays on the matrix to plot the thinking journey for their creative practice. In fact the matrix only acted as a starting point for discussion at the first group meeting (see Fig. 2. p. 88). Later the research findings showed that the dyslexic artists tended to think in flowed thought.

This was quite different from the matrix, which was the researcher's attempt to provide structure to any dialogue that might be in keeping with the sequential nature of PhD research. It was interesting that the matrix was not utilised due to quite different thinking patterns. The thinking process that informed the case study practice was later evidenced through actual creative practice; the exhibitions, talking-heads videos, audio recordings; it was not destined to be fixed within a two-dimensional tool such as this matrix template.

Although an element of the research is autobiographical and sits within a socio-cultural context of dyslexia, it was important that my own values (as the researcher) did not influence the other participants. It was essential that my own socio-historical perspective did not influence the research; thus the aim was to produce findings that are truly independent of any particular value stance. For this reason, during the process of filming, I was the last to speak.

The ethnographic context

Ethnography can be described in a number of ways; qualitative inquiry, fieldwork, interpretive methods and case study investigation. Recent interpretation of ethnography suggests that the research participates overtly or covertly within a person's life. There is no ending point, rather this approach is consistently observed (Atkinson and Hammersley, 2003, p. 3). For example, the case study work was further base-lined when participants contextualised their practice through talking-heads films which outlined where they had come from, their thinking at present and where they were going with their practice. These films positioned them within their own practice. The ethnographic context continued throughout the research by studying the socio-cultural perspective of thinking to production (non-dyslexic and dyslexic). Therefore, true to an ethnographic approach the research was based within field study. As the researcher, who is also dyslexic, I was an active participant recording field notes through film, text and practice.

The research techniques have been facilitated by an integrated process, beginning with the here and now experience, as a concrete experience which

validates and tests abstract concepts, followed by the collection of evidence data and observations of that experience. Thus immediate personal experience gave substance to abstract concepts such as: what are the thought patterns that enable connections to be made for in-depth understanding of new action and new experiences? The aural, visual and action based approach to the collection of evidence lent itself to the production of a set of filmed talking heads and exhibition films that provide evidence of practice. As participant and peer observation feature in this research there were no predetermined strategies but a reflexive and iterative approach that operated through every stage of the project (Atkinson and Hammersley, 2003. p. 21). Within this context the ethnography acts as a process of discovery with no well-developed theory to be categorised within methodological discourse.

3.3 The reliability and validity of the research

The approach to the analysis was both qualitative and interpretative, incorporating a range of tools to include comparative observation and statistical analysis. The research sought to make a valid and justifiable investigation by benchmarking data across groups of non-dyslexic and dyslexic artists. Thus the initial investigation was carried out as a pilot to check the relevance and validity of the proposed research. Reliability of the subsequent data from the fieldwork was tested through a range of tools. These tools were used according to the qualitative and statistical requirements of the research investigation. The design of the data collection was devised to be conducive to a range of fieldwork scenarios.

The data collection tools; the three stages of the research

Stage one; proving the validity of the research by triangulation of the case study investigation

Comparative observation:

- Filming of case study artists' group sessions and interviews.
- Filming of two exhibitions.
- Interviewing of exhibition visitors.

Semi-structured interviews:

Transcriptions of interviews conducted with the emergent themes analysed through interpretative methods.

Practice:

- Collaborative organisation and reflection of practice.
- Peer observation and meetings.
- Exhibition posters articulate emergent themes.
- Visuals captured on Vimeo site.

Stage two; the online survey testing validity and reliability

- Questionnaire devised, informed by case study themes.
- Bullet points of main statements made by each group.
- Key words captured from responses and placed within a template open coding survey themes.
- Key words translated to visual word clouds.
- Analysis of the survey for variables and validity.

Stage three; the semi-structured interviews testing validity and reliability

- Likert scale introduced to ten of the survey responses.
- Reliability analysis of Likert scale; weighting of attitude at interview.
- Taped interviews with transcriptions produced.
- Interpretative methods of open coding analysis to reveal themes from the transcriptions.
- Template of axial coding for themes drawn from Stages two and three.

3.4 Coding data and overview of data collection

The data was analysed through interpretative coding methods to understand attitudes, thinking, values, contexts and any change in perspectives. First this was through open coding then axial coding; the open coding method (see Appendix F, p. 311) to identify chunks of data and the axial coding to identify links and relationships (see Appendix J, p. 319).

The interpretative element aimed to gain a better understanding of the thinking to practice as presented and to explore the participant experience, dyslexic and non-dyslexic, from his or her perspective. This approach 'recognised the researcher's own view of the world as well as the nature of the interaction between the researcher and the participant' (Willig, 2010, p. 56).

Interpretative phenomenological analysis is concerned with gaining a better understanding of individual experiences and the nature of the phenomena being studied. The purpose is to share the phenomenon under investigation with the researcher. Thus the questions were open-ended to ensure the experiences were understood from the participants' perspectives. The analysis was in stages, with the transcriptions of the interviews read by the researcher to use 'open coding' in note form to document themes that characterized each section of the transcription. The next stage was to structure these emergent themes, through a listing of themes, open coded and linked to sections of the transcriptions. The final stage was to make links across themes from the subsequent template of axial coding; the analysis was summarized to highlight the key themes from the fieldwork (Willig, 2010, pp. 56-58).

The sampling was 'purposive or qualitative sampling' to select participants specifically rather than randomly. The approach was to sample to achieve representativeness and comparability so as to investigate the phenomena of multi-dimensional thinking in two groups of selected visual artists. Thus the sample size addresses the specific purposes related to the research questions. (Teddlie and Fen Yu, 2009, p.84).

Within the survey, questionnaires and interview transcripts, the analysis identified chunks of key words or data that described an attitude, value or situation. So that meanings could be over-layered and data could be tested across the questionnaires (Stage two), data collection happened in two ways; 1) key points were captured and listed as bullet points under each survey section heading, 2) to test reliability of the emergent themes, key words were then entered into a template of section headings to be transferred and

interpreted within visual imagery of word clouds. The key words were grouped together according to the questionnaire sections and attributed to each grouping of artists. These word clouds are shown in Appendix P (see p. 333) of this research and provide a visual analysis of the key words. They aim to convey as many meanings and narratives as the text-based sections of this research.

The interpretative phenomenological approach to the analysis was combined with a comparative observational viewpoint at stages one and three, namely the interviews. At those stages the interviews were taped to produce written transcriptions for open coding of emergent themes. Data was collected by drawing out the main points made within the margins of the transcriptions. These themes were then placed within a template of open coding, which also set out the themes drawn from stage two, the survey stage, to understand connections and emergent meanings (see Appendix F, p. 311). The data was then mapped for themes through word clouds (see Appendix P, p. 333) and through a listing of key points drawn from Stage 2 (see Appendix G, p. 314). A listing of themes drawn from Stage 3 (see Appendices N, p. 331 and O, p. 332) was cross-referenced with previous themes within an axial coded template (see Appendix J, p. 319); thus relationships and links throughout the research process could be identified.

Triangulation of the data collection examined the research from a number of vantage points to ensure the validity of the research purpose. This was particularly utilised during the pilot of the fieldwork (Stage one), to ensure validity of the research (see pp. 62 and 67). The triangulation of the pilot included interviews, comparative observational data and creative practice within two exhibitions. Though a process of 'iterative overlaying' the analysis provides a definitive and objective explanation to the emergent and different perspectives, thus allowing for changes of discovery, a wider picture, and the combination of qualitative and statistical data. As one of the original case study artists within the pilot, I was able to use observation that enabled comparative involvement as an approach.

This allowed me to 'uncover meanings and motivating factors that a more objective, external, observer might well miss' (Hammersley and Atkinson, cited in Birley and Moreland, 1998, p. 52). The checking of the validity of the experiences happened during the two exhibitions with audience feedback and the subsequent research at stages two and three.

3.5. Triangulation: stage one evaluating the validity of the research

The evidence was drawn from interview questioning, comparative observation and collaborative practice.

1) The questions placed emphasis on cognitive thinking abilities, such as meanings and links, ways of interpreting ideas, thinking approaches to production, ability and approach to analysis, own experiences, views on creativity and influences on own practice.

2) The comparative observation methods for the research were recorded using audio, visual recordings and written notes of feedback. The first stage, case study interviews are captured by film and can be viewed on the research Vimeo site (Hewlett p. 290) The two case study exhibitions can be viewed by film and the second research exhibition was photographically recorded.

3) The collaborative practice within the two exhibitions was evidenced through audience responses, films, photography and artists' discourses. The action of creating and producing the practice included reflective intuitive collaboration. The participatory paradigm was a critical element of this evidence gathering, which sought to bring together the self-reflective collective and self-study of practice, whilst strongly committed to the participation of research within a social construct.

The case study interviews showed that the artist participants increasingly collaborated and found a voice for their exploration. Following the interviews, the case study artists transferred these discourses and collaborative work to the research exhibitions. The purpose of the exhibition collaboration was to

evidence the multi-dimensional thinking that can occur during production. The interviews had shown that the artists could think and work in a multi-dimensional way to reveal new ways of thinking and seeing. Specific examples were the time lapsed films of LC, the sound spark moments of SB, the overlapping narratives of NM and the symbolic layers of meaning for KH, which included reference to dreams. The research focus was formulated from these interviews, discussions and observations of creative practice. The design of the exhibition, the practice and exhibition posters were informed by the emergent research focus (see Fig. 12, p. 130).

The triangulation of approach to the data collection was further continued as an approach to the analysis through both comparative observation and interpretative phenomenological and statistical approaches. Themes drawn from the pilot stage concurred with the themes drawn from Stage two and at a richer level within Stage three of the data collection.

3.6. Qualitative mixed-method approach to the fieldwork stages

A variety of tools have been utilised to gain as much contextual information as possible for a comparative analysis of non-dyslexic and dyslexic creative thinking. Stage one, dyslexic case studies, investigates the validity of the research. Stages two and three test the validity and reliability of data collected for any phenomenon of dyslexic thinking. The dyslexic artist case study (stage one) was with a small pool of four dyslexic practitioners, including the researcher. The investigation then widened the pool to include 40 dyslexic and non-dyslexic visual practitioners for a comparative analysis within a survey questionnaire and interviews. All the artists are a product of higher education with some who have experienced education and training at postgraduate level.

Stage one: the case studies, July 2010 - October 2011

The Stage one triangulation investigates validity and benchmarks to the research focus. This stage investigated whether the research was valid for investigation. The triangulation of data analysis included observation of practice, the exhibitions, action research, my own practice and filming of the

interviews. This cyclical process was developmental and included reflexivity to assess what is distinctive in the investigation. The observation was recorded using video. The reliability was checked through case study dialogue while the validity was tested through different observations to check for similar focus. (Birley and Moreland, 1998, p. 52).

Stage one tested the validity of the research in order to examine the research focus from different vantage points, with the aim of writing a clear account of how the phenomena of dyslexic visual thinking has been investigated within the methodology. As the methodology includes data analysis which tests the validity of the data and measures for reliability, the validity is concurrent with the testing for reliability. Thus the data collected is valid for a much wider relevant population than that from which the sample has been drawn.

Baseline evidence was drawn from an introductory questionnaire and from group sessions to introduce the research. This formed the preliminary discussions. The three sets of interviews were filmed as a series of talking heads and provided an ongoing dialogue for the practitioners (Vimeo.com). The purpose was to incorporate objective and subjective observation of thinking and practice. All interviews were transcribed and the interviewees were given the transcriptions for their approval. All interviewees agreed to give consent to the research.

The research started with a set of four case studies of London-based dyslexic artists whose work have been articulated within a series of videos to map their practice approach. This study was over a period of fifteen months from August 2010 to October 2011. In October 2011 the case study research investigation culminated in an Exhibition called 'Ways of Thinking' and then in 2012 an exhibition called 'Ways of Thinking 2'.

Stage two: the survey March to April 2012

Stage two included a wider sample to test both the reliability and the validity of the data. This was to ensure that the methodology of investigation is valid for a wider group thus checking the authenticity and relevance of the data to the research focus. The research drills down to investigate attitudes, values, strategies, practice, culture, experiences and thinking.

The purposive sampling of the populations or percentiles was to achieve representativeness and comparability of non-dyslexic and dyslexic visual artists' thinking to production (Teddlie and Fen Yu, 2009, p. 80). Artists were asked to identify if they had been assessed as dyslexic. The samples were drawn from clear and distinct groups. These were visual artists who had experienced higher-level education. The samples were large enough to provide meaningful data with 40 returns from the online questionnaire and 10 semi-structured interviews drawn from this data. The purpose was to investigate visual thinking within a social-cultural context to reveal any value to mainstream thinking. As questionnaires have an emphasis on writing ability those surveyed were encouraged to feed back in a range of formats. The survey was devised using feedback from stage one and building on the questions formulated during the case study and exhibition phase of that fieldwork. The questions were drawn from the themes identified at stage one.

The questions at Stage two were then put together in consultation with the stage one case study artists. (see Appendix A, p. 297). The questionnaire was scrutinised by the researcher, supervisors and the case study participants. The key words were: ideas, links, thinking, production, creativity. The following were the areas of consideration:

- Levels of interpretation to include reflection on experience.
- How understanding happens in the acquisition of new skills in relation to arts practice and production.
- Thinking was given much more emphasis as an independent cognitive approach to the inner and outer environments.

The second stage survey questionnaire was devised to capture the thinking in the production of dyslexic and non-dyslexic artists. The survey was disseminated, via email circulation to: Norwich University of the Arts, University of the Arts London, Working Men's College, Bristol FE College, individual artists in Scotland and SW of England. There was a return of 40 questionnaires. A comparative analysis of the data was conducted and embedded within phenomenological interpretative approaches. The qualitative interpretation was coded into two templates capturing the key words of the dyslexic and non-dyslexic artists (see Appendix F, p. 311).

This produced a set of word clouds to visualise the responses as part of the interpretative analysis of Stage two of the fieldwork. To provide a further comparative analysis a set of bullet points for each of the group responses was produced (see Appendix G, p. 314). The qualitative investigation of thinking was enhanced by section 1 of the survey, listing gender, age, educational level, geographical area and subject area of study. Section 5 of the survey further provided data on approaches to production (see Appendix H, p. 316).

Stage three: the semi structured interviews March, April and May 2012

Building on the survey data, these interviews had a phenomenological interpretative approach to the dialogue. Ten participants were selected from the survey analysis. The selection was by participant self-selection or by invitation from the researcher and research colleagues. This enabled a wide range of age group, gender, educational experience and location. Five artists were dyslexic and five were non-dyslexic. Both groups included male and female artists. The geographical area was London, Surrey, Norfolk, the West Country and Scotland.

A Likert scale (see Appendix E, p. 304) was introduced to the survey responses for the ten semi-structured interviews (Stage three). This was to find out the attitudinal significance of the responses and provide more detailed statistical data. Each survey statement was separated and then scaled by the interviewees prior to the interview; the purpose was to contextualise

understanding of the position of the artist within their approach to production. Two of the interviews took place via Skype and the other eight were face-to-face. All the interviews were taped and some filmed as a talking head for inclusion on the research Vimeo site. All interviews were transcribed and the interviewees were given the transcriptions for their approval (see Appendix L p. 328). All interviewees agreed to give consent to the research. As these interviews were semi-structured, the questions were guided by the survey sections but would also, at times, range across topics to capture thinking at the time of interview. The questions are outlined in Appendix J (see p. 348). The qualitative investigation of thinking and data analysis is summarised in Chapter 8.

The Likert scale and the ten semi-structured interviews tested the reliability of the data (Stage three). The Likert scale measured how well the data correlated with the interpretation of the survey (Stage two) and further correlated with the narrative drawn from the interviews. This retests using an attitudinal scale to check the reliability of results as applied through both methods of data collection. The data drawn from the survey benchmarked data for the subsequent interviews. With the original data ranked, the purpose was to measure the reliability of the sample at stage two of the stratified groups of non-dyslexic and dyslexic visual artists. This sample was then divided into sub samples for Stage three data collection. These sub samples introduced a self-selected group who wished to engage further with the dialogue.

At Stage two the survey was constructed by looking at the essential questions needed to investigate the main research focus. The independent variables were age, gender, educational experience, type of practice/medium and the thinking approach to practice. The approach to the validity of data collection methods, for this survey and the emergent questions, were piloted within stage one with the case study artists. The survey was tested for reliability at stage three with the Likert scale.

The responses to the questions were recorded within an open area of the survey. All the questions were designed to ensure the respondents had the sufficient knowledge to respond. Interval scales were introduced in section one of the survey to record variables.

The approach to Stage three interviews was semi-structured to enable flowed discussion which was still rooted within the framework of the survey questions. Prompting happened if the dialogue became less flowing. Initially, the method of coding was 'open' with chunking of data as an 'appellation of a descriptive label'. Following this, the analysis of all the stages is 'through axial coding' which makes connections through categories. This axial coding systematically interprets and links to other categories; validating those relationships the core category is revealed (Birley and Moreland, 1998, pp. 61- 76).

All the interviews happened within an informal setting and were taped for the transcription. The transcriptions were first analysed for open coding categorization followed by axial coding which mapped the patterns of theme. Discussion took place at the second research exhibition at the Westminster Reference Library in October 2012. This captured some of the audience comment, which is outlined in the review of the exhibition (see Chapter 5). The audience was actively encouraged to feedback to the artists on the themes outlined in the research poster (see Fig.12, p. 143).

3.7 The methodology in practice and the ethics

A range of research methods was utilised, including case study dialogues, survey questionnaires, in-depth interviews, practice observation through films, practice production through exhibitions and exhibition audience feedback. The theoretical and practical work was investigated simultaneously to allow each part of the research to impact and inform the next stage as an iterative process of investigation. At each stage of the research, the form of questioning stayed consistent with that stage of the research but allowed for flow of dialogue.

The investigation was therefore incremental and iterative with investigation informing the next stage of the research methodology. Data collection was conducted through participatory and interpretative analysis of the case study questionnaires, case study interviews, case study exhibitions (Stage one), a survey, feedback from in-depth interviews and exhibition audiences. During Stages two and three, the questionnaires and the Likert scale provided a tool for scaled analysis as a benchmark to the qualitative investigation and contributed to the statistical data drawn from the analysis of Section 1 of the survey and from the first question from Section 5 of the survey (see Appendix H, p. 316).

The questionnaires and interviews were analysed through coding to reveal thematic findings, (see Appendix J, p. 319). This tool enabled a comparative analysis of the qualitative interviews, thereby providing rigour to the investigation. The research focus was formulated during the investigation and towards the end of the third stage of this research. Thus a set of questions and themes was investigated through various research tools and throughout the life of the research. This provided a framework from which to analyse response and to review development.

The cultural perspective for analysis and research focused on 'the sets of ideas, attitudes, values and norms of behaviour that govern or affect individuals and groups' (Birley and Moreland, 1998, p. 109). This cultural perspective means the researcher was sensitised to any cultural differences between groups. Therefore the analysis seeks to translate and interpret any cultural differences.

The research questions

The research questions were formulated from the stage one investigation of the dyslexic case study artists and were framed to ask how the artists engaged cognitively with the production of their creative practice. The questions focused on the different dimensions of thinking and scales of engagement with creative production.

The questions themselves generated the categories that emerged through the research process and the coding for analysis during stage three of the fieldwork. This captured the reality of the phenomena under investigation. This approach to the research questioning is based within 'Interpretative analysis' and is intended to:

'Understand the quality and texture of individual experiences; thus to be interested in the nature or essence of the phenomena. Interpretative analysis leaves room for creativity and freedom to explore on the part of the researcher who uses it' (Willig, 2010, p. 73).

The interviews were conducted by providing clear briefing and ensuring that there was confidentiality at all times for each participant. All participants remained anonymous if they so wished. Participants received a transcript of their interview and were able to comment and feed back to the interview process. All participants were able to access information through visual means, aurally, or by email through text to speech software. The questions were consistent throughout each stage with each participant. However during the semi-structured interview, participants would develop the dialogue according to their thinking and responses.

3.8 Format of questions within each stage of the research

Stage one

Case study questions: Session 1

- What is the nature of your visual practice?
- By what means do you gather information for your work in progress?
- How did you improve your own learning experience?
- What do you think is your own learning style?
- What are the unique features of teaching creative arts subjects?
- What is your preferred structure for gathering information?
- What do you think is the nature of dyslexia?
- How has your dyslexia shaped your life?

Case study questions: Session 1 continued

- What would you understand to be the social model of dyslexia?
- What would you consider to be inclusive practice within course work?
- What are the key creative elements of your dyslexia?
- What are the talents attributed to creativity?
- What example do you have of your creative problem solving skills?
- What were and are your coping mechanisms?

Case study questions: Session 2

- What fires you up creatively?
- Where have you come from?
- Where are you going?

Case study questions: Session 3

- What prior experience has shaped you today? What experience when you were growing up shaped your learning and production?
- Can you describe the cycle of your thinking to production?
- What do you think is the function of your production?
- Does your creative production give more meaning to you in terms of moving on with your own creativity?

Exhibition production prompts

- What are the multiple approaches to thinking?
- How does my thinking inform my creative production?
- How have I developed my learning?
- What journey have I taken?

Stage two

Survey Section headings:

- | | |
|-----------|--------------------------------------|
| Section 1 | Educational experience |
| Section 2 | Ways of interpreting ideas |
| Section 3 | Your strategies for thinking |
| Section 4 | Your views on creativity |
| Section 5 | Your approach to creative production |

Stage three (listed by question order)

Example: Section 2: Ways of interpreting ideas

Gathering information/ gain meaning

- Do you have a multi-layered approach to gathering information?
- When you scavenge for materials are you looking at things visually?
- Do you have ideas in your head when you are looking for inspiration?
- How do you make links between ideas?
- It sounds like your mind ranges all over, do you find this hard?
- So you find finishing hard?

Your strategies for thinking

- Where does the buzz come from?
- What is the tentative part of engaging others?
- How do you analyse? (You say 'when thinking, I try not to analyse' can you explain?)
- Is there a difference between analysing and conceptualising?

Views on creativity/ production

- What do you admire?
- Do you see in a detached way?
- What is your creative production?
- Do you like meandering investigation?
- When you consider your production what does it look like when you are visualizing? Is it spatial? Is it 2D? Does it move?

The ethics approval confirmed participant anonymity throughout the research investigation. However the case study participants agreed that they wished to have their names profiled next to their practice during the two research exhibitions.

Prior to the case study interviews and the ten semi-structured interviews each participant was given information about the research and a consent form to sign (see Appendix K, p. 326). All participants had the right to withdraw from the research if they so wished. All interview transcriptions (anonymised) and a summary of the case study findings were given to the participants. All interview transcriptions were given to the ten semi-structured interviewees. All questions were posed with the agreement of the participants. However, in the third session each participant had the opportunity to rework a new set of questions following feedback from the analysis. All research participants will be informed of the findings of the research and they will have access to any publications arising from the study they took part in (Willig, 2010, p. 19).

3.9 The researcher's approach

Throughout this investigation my approach has been of one continuous clarification and development. Central to the research is the underpinning principles of exploration from which flows the concept of creative thinking to production. Flowing out of this is the evidence of mixed methods of practice and management by the practitioners of the process itself. From these underpinning principles came the case study approach, which broadly looked at a dialogue of reflective analysis feeding into the action of practice. This flowed approach links with my approach to the methodology; rather than working from a point of detail and working up to the concept, I was working from the concept down to the detail. This approach was shown to be similar to several dyslexic artists who were part of the survey and the semi-structured interviews.

The dyslexic artist case studies were the first part of the investigation, feeding into a survey, which in turn informed the following ten semi-structured interviews. As part of the mixed method investigation, the case study interviews provided a contextual basis from which two exhibitions were designed and produced. The purpose of the first case study exhibition was to build on the findings to date. Both the subsequent survey and the semi-structured interviews then collected data from non-dyslexic and dyslexic artists.

A useful element to the research was an informal dialogue between the case study participants, the survey participants and exhibition visitors, where they discussed the approach of the research. The methodology of this research included reflexivity due to the phenomenological and ethnographic perspectives of the research (Willig, 2010, p. 18). Embedded within this research is the reflective analysis of my own visual work. The body of my visual work is printmaking, painting and glassmaking. Through my practice I develop imagery that has come out of my emotional response to my own creative working process. As a facilitator, practitioner and researcher, this reflective work contributed to collaboration with the three other case study artists.

Case study work investigated participant practice and my own practice through examining dyslexic-influenced thinking in producing ways of seeing and conceptualising the world. This stage of the research critically reflected on practice to better understand the impact of dyslexia on these ways of thinking (and seeing). The aim was to baseline evidence to inform the mixed methods methodology of the next stages of the research fieldwork. My approach to the analysis of the data was divergent, i.e. gathering data through a range of methods.

My dyslexia influenced my approach to the analysis, with colour-coded categories, thematic emphasis and an in-depth production of word clouds drawn from keywords within the questionnaire feedback (see Appendix P, p. 333). The word cloud visuals represented the visual analysis of the findings from which I could make conceptual sense of the emergent themes (see Chapter 6).

The series of investigations are not prescriptive as there is no set template for what we mean by creativity (see Chapter 2). Thus the research methodology was in constant flow and development akin to the 'flowed thinking' that is further discussed in this investigation (see Chapter 10 and Conclusion). In this continuous development model there is no distinction between the practice being researched and the process of investigation of the research focus.

Thus the research methodology is best described as action research and rooted in a range of methodological approaches, defined as a 'Mixed-Methods approach':

'The Mixed-Methods approach is helpful in thinking in terms of, Multi-dimensional research strategies that transcend or even subvert the so-called qualitative-quantitative divide through a flexible qualitative thinking investigation. Mixing methods helps us to think creatively and outside the box' (Mason, 2006, p. 9).

Chapter 4: Overview of fieldwork and stage one case studies

4.1 Introduction to the overview of the fieldwork

The determining principle for the research is that the data collection is reliable and rigorous, thus any evidence found can be justified as valid. Due to the mixed method nature of the research there are interfaces that include both subjective and objective views. The subjective views are some of the artists' opinions and the objective element is fact-based, drawn from observation and scaled feedback. The first stage of the fieldwork interviewed four dyslexic artists to investigate if there was evidence of any impact of dyslexia on learning and creativity in the visual arts. This stage was useful in scoping the dyslexic responses and to ascertain, with respect to a previous gap in knowledge, whether qualitative research was worth further investigation. Thus Stage one of the research did not include non-dyslexic artists; in addition, one of the case study artists is the researcher.

The fieldwork and data collection took place from 2010 to 2013, drawing on a range of formats to provide evidence for the research questions. This was a process that informed each incremental stage, with the analysis conducted through a coding of themes and key words. The research developed analysis classification coding drawn from interpretative phenomenological approaches. This mixed method research includes qualitative and statistical research tools, case studies, online surveys and semi-structured interviews (Willig, 2010, p. 63). The coding identified themes that are consistent and iterative within the investigation such as the consistency of keywords in each stage of the fieldwork (see Appendices F, p. 311 and J, p. 319).

The participatory investigation and analysis of the dyslexic case study interviews, also feedback from the two case study exhibitions, informed stage two of the fieldwork: the survey and the survey section headings. As part of this participatory enquiry the exhibitions were collaborative and provided a rich environment for further analysis of potential characteristics of dyslexia within a socio-cultural context.

By including two exhibitions within the participatory-led research of dyslexic artists, I wanted to find out if there are any differences in collaborative thinking.

Non-dyslexic artists and dyslexic artists were part of stage two and stage three of the research. The response from the survey (Stage two) informed the subsequent stage three semi-structured interviews. In that sense the research is both strategic and applied. Strategic in terms of the planned incremental approach to analysis within this mixed method of research; applied in that the research includes the creative practice element: exhibition presentation, observations during case study work and my own creative practice.

4.2 Introduction to the case study fieldwork

The participants were selected through a call to initially investigate if there was any value to the research approach. Three case study participants expressed an interest and during the fieldwork they were encouraged to describe their thinking to production. This direct experience of their own creative practice then informed the subsequent stages of the research fieldwork. As the researcher was part of Stage one it was important to ensure a lack of bias, hence the subjective and objective (respectively the researcher and the case study artists) approaches to the research investigation.

At the start of the case study fieldwork there was an introduction to the research, on a one-to-one basis, with all the participants, followed by a group discussion (August 2010). This gave context to the research aims and outcomes. At that time all the participants signed a consent agreement to be part of the research. The group session was useful as each person could gain an understanding of where they were positioned within their own practice and share the value of their thinking approach to their practice within this research. The first group session set the basis by which the research was conducted as a semi-structured participatory ethnographic inquiry.

The case study participants were given a verbal overview of the research and diagram information. Subsequently each participant was briefed consistently

about the development of the case study research; this was through emails, phone calls, and in each of the three one-to-one interviews. The process was useful in formulating questions at each interview stage of the research. Questions therefore built upon prior interviews to extrapolate more meaning and discussion about cognition and production. Clarity of research purpose was essential to ensure that case study participation provided meaningful value, thus supporting the interpretive approach to the interviews. The case study interviews were recorded on film and then placed on a Vimeo site dedicated to this research. At Stage three, the semi-structured interviews were tape-recorded. The philosophy of the qualitative nature of the research valued the individual's experiential knowledge base. All the interviews were then transcribed to introduce coding to interpret and to extrapolate themes and patterns of meaning.

The research investigated dyslexia and creativity, visual arts education and practice within socio-cultural and theoretical contexts (see Chapter 2, pp. 31-56). The investigation was empirical, participatory and interpretative; hence the range of fieldwork data to investigate the gap in knowledge and in particular the impact and implications of dyslexic creative thinking in the visual arts, and teaching and learning in mainstream education.

There was an introductory group session that took place in the main researcher's studio. The group interview was important to the research aims and to the unfolding discourses that were to be the case study research exhibitions. At that time the matrix of thinking was shown and discussed as a starting point to the investigation. The matrix was introduced as a tool to activate a thinking journey map for each case study practitioner. The first one-to-one and group interviews took place in order to baseline experience, and to introduce the research aims to the case study participants. The questioning was built incrementally at each interview stage. Each case study participant was therefore interviewed three times.

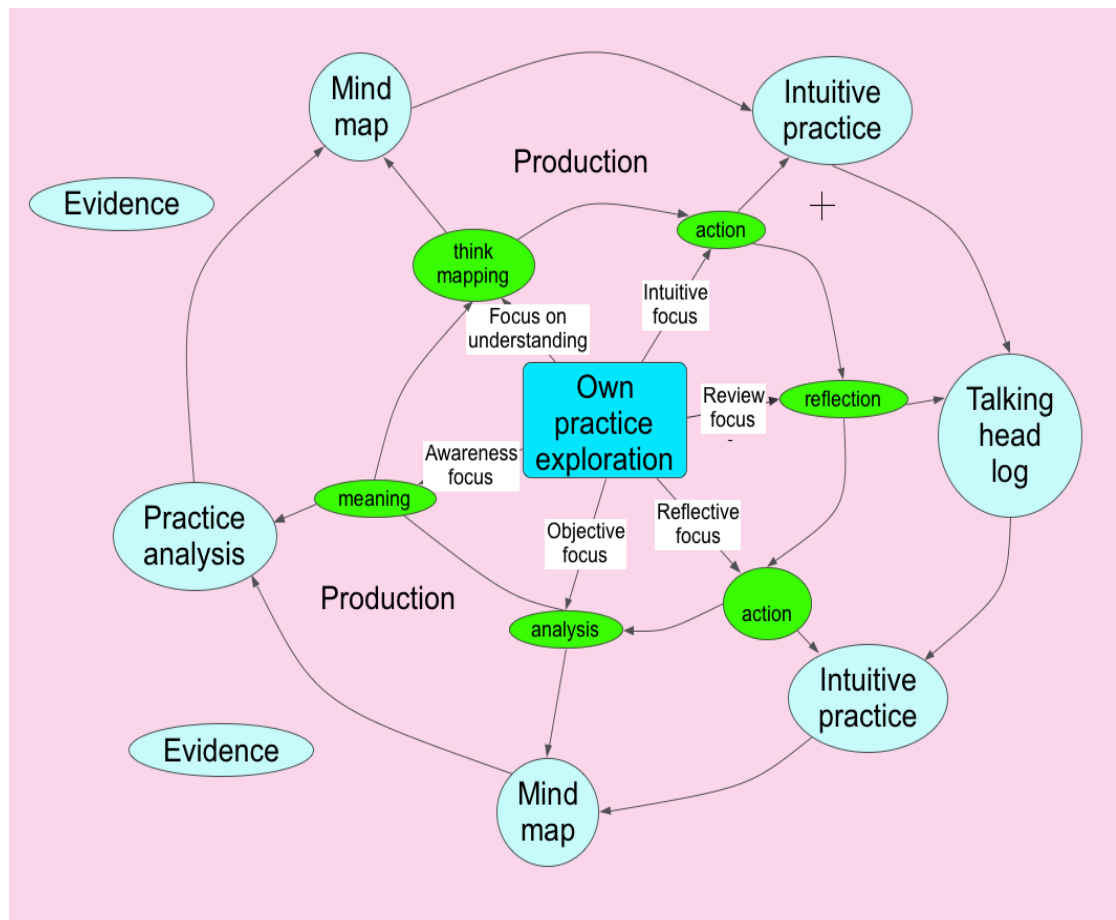


Fig. 2. Matrix of thinking for stage one of the fieldwork

The first one-to-one case study interviews took place in locations that were linked to each participant's practice, to find out how the artist might position themselves within their creative practice, their view of their dyslexia, how they viewed creativity, how they had developed strategies for gathering information and how they learnt. The second (one-to-one) interview took place in their homes, studios or in one case via laptop in a café (virtual studio). The third set of case study interviews took place in the main researcher's own studio. This was to feed back on any elements of the research to date. Prior to the third session, all interview transcriptions were given to the participants, also a summary of the case study findings. All questions were posed with the agreement of the participants. In the third session participants had the opportunity to rework a new set of questions following feedback of the analysis thus far. The final interviews were concluded in August 2011. The case study investigation took one year, with a period of time

between each of the three interview sessions for the participants to engage with their own production and communicate their thinking to the next interview session. By the third set of interviews, it had become clear that each artist thought in a variety of dimensions. The case study artists showed an ability to map thoughts from a range of spatial and time-framed perspectives. All interviews were videoed and placed on the research Vimeo site.

Stage two of the research then investigated this ability in dyslexic and non-dyslexic artists. To contextualise socio-cultural perspectives the literature review debated the theoretical perspectives within mainstream education, visual arts practice, creativity and a range of integrated cognitive approaches. The research now needed to ask 'how are multi-dimensional thinking abilities manifested?' At the second interview stage, the case study participants' innate nature of thinking became clearer and could be reflected upon during the third interview stage.

The research focus was profiled at the first exhibition 'Ways of Thinking' and further articulated at the second exhibition 'Ways of Thinking 2' (see Chapter 5, pp. 109-141). These exhibitions were informed by the earlier case study interviews and therefore the design, curation and dialogue for the exhibitions was an iterative process. All four artists are different in the way they render their work. I work with a range of media: paint, print, drawing, glass to make symbolic reference to life journeys. NM is a performance and installation artist with in-depth messages about the human condition. LC is a filmmaker, photographer and digital artist who makes detached observations about situations placed in phased time. SB is a musician and singer working in film and live performances. Her compositions are very personal in that her music is created in sharp response to her own emotional situation at that time. Her video work for the exhibition charted the way she perceived her emotional growth linked to her different way of thinking.

The following summaries were drawn from the transcriptions of the first, second and third interviews. This narrative is an introductory summary of

these artists' discourses on their thinking around production. These case studies had several threads running through them. There was a consistent reference to space and the ownership of space. Much of the process was reflective and action-based to reveal the consequences of experience and to make sense of the environment they inhabited. The case study artists, NM, LC, SB, and KH provided a rich source of information which informed the earlier frameworks of questioning (Stages two and three). For example SB needed sound to help her connect thoughts. Sound was a trigger to her thinking, sounds would remind her of memories, trigger ideas and spontaneous action. A pattern emerged of 'practice-reflection-practice-reflection'. Frequent visualising was used to make sense of contexts and concepts. By extensively using this strategy, practice became fine-tuned to inform creativity and conceptual thought. For several of the case study artists, creativity was the ability to think laterally and apply it to production, building relationships and concepts. It was a way of navigating the world that was integral to their artistic practice. It might be concluded that these artists were drawn to a way of working that suited their thinking.

Each artist had demonstrated a different thinking pattern in approach to practice. There was a clear difference of approach in the way the artists referenced influences, concepts, meanings and ideas. One approach was to connect the work as a map of links to revisit, reconfirm, explore and change meaning. For LC, the photographer, the camera was his way of charting the territory with multiple images to inform his ideas. Even while we were having lunch, and I was recording our conversation, LC was taking photographs to record his version of the session. *'I want to remember this, store it and come back if I want to'.* LC

Quite different was NM, a painter and installation artist. He approached his work in staged levels of activity. Each piece of work, rather than a whole, was revealed in a slow methodical series of depictions, rather like a slow wave moving forward in stages across a beach. NM was severely dyslexic, he could not make sense of text, and organisation could be very challenging for him.

He had a very structured approach to the organisation of his life with many lists to double-check everything. His whiteboard was the most important tool for him and had provided a way that was helpful in managing day-to-day living. However, NM had little confidence in his own ability. He was anxious all the time in case he would 'get things wrong'; this impacted on his freedom to have space for creative emotional responses 'I cannot disentangle my character from my dyslexia'.

Visualisation, space, sound and movement were the primary ways these artists understood the creative process. They used various tools and methods to capture their patterns of thinking. Following the case study interviews and subsequent two exhibitions, a survey was designed, based on the feedback from these participants and the exhibitions of October 2011 and October 2012. The survey questions placed emphasis on cognitive thinking abilities, such as meanings and links, ways of interpreting ideas, thinking approaches to production, ability and approach to analysis, own experiences, views on creativity and discussion of influences. This research investigation set out to explore arts education and the production of visual artistic work to better understand the relationship between the dyslexic thinking approach and work produced. The following questions helped me, as the researcher, to prompt thinking at the start of the investigation:

- What key inclusive teaching elements work within arts education?
- Does there need to be a set of learning outcomes?
- What are the thinking approaches displayed by dyslexic artists?
- How can this usefully inform mainstream education?
- What are the learning styles of dyslexic arts practitioners?
- How do these learning styles impact upon the work of arts practitioners?

Theoretical perspectives (see Chapter 2) provided a background of knowledge from which the production of the artists could be explored. The first interview covered the themes of: how their dyslexia was viewed by them, how they viewed creativity and creative practice, how they had developed strategies for gathering

information and how they learnt and processed information. The second interview investigated the artists' creative practice and their approach to production. The third set of interviews facilitated reflection on the creative journey travelled during the interview sessions and reviewed their thinking approaches to production. These interviews revealed the artists' positions in their thinking to production and became a valuable source of information to frame questioning for the next stages of the research. The next stages were the survey with 40 visual artists and finally the semi-structured interviews with 10 artists. The case study artist interviews provided baseline research with a series of questions and discussions to develop the research focus for the next stages. Thus all case study participants were dyslexic whereas the subsequent survey respondents were dyslexic and non-dyslexic, as were the semi-structured interviewees.

4.2.1 First interview sessions

This set of interviews covered the artists' views of their dyslexia and the strategies they developed to manage life, their creativity and their views due to these experiences. Throughout the interviews the case study group was asked to reflect on the questions posed for the next set of interviews.

Case Study SB

SB had a lot to say about how dyslexia had shaped her life. To SB, this had been akin to carrying a 'heavy bag of bricks'. At the start of this research she had said she did not celebrate her dyslexia; everything was twice as hard as a dyslexic person. SB keenly felt that she had to fit in and because of this she was an outsider and different. She knew it was okay to be different and felt she was in a process of change. To SB being honest was part of being dyslexic yet it got her into trouble. She could feel passionately about injustice and knew she was too honest to be 'corporate'. She believed that her dyslexia had helped her to be open which in turn had meant she had made connections with some 'wonderful people'. SB believed that people only had one opportunity 'on this planet' and she intended to live life to the full, contribute and achieve in her life. Her determination was a large part of her dyslexia. She found that she had to check things all the time because she was determined to do a good job. SB did this because she did

not want to fail, an experience that had overshadowed her schooling. As she grew up she had found strategies for remembering. SB would sing the alphabet, finding she could learn through singing. SB took comfort in sound - she did not have to 'fit in' with sound as there was no negotiation; she just did it and it worked.

When growing up SB did not wish to be a problem to anyone and therefore quietly explored the way she could develop her abilities in creativity and learning. SB always wanted to be positive and would over-compensate so she could excel in the areas she might easily fail in, for example administration. Because learning through sound was so vital to her, she would engage her university lecturers in conversation so that she could remember their voices, even though her lecturers would often consider that she was holding up the class with her questions. These voices would be embedded in her memory as tones and variations triggering reference points to thinking, for example, studying classical music really helped her to absorb information:

'Movement is also important; my ear has to tune in and hear more clearly. When I tune in the words leave an imprint'.

SB considered she was fortunate as her partner was highly academic and he would support her, in particular, with writing. However, higher education had 'scarred her' when one of her lecturers described her writing as 'idiosyncratic'. She found that fear would build up incrementally to the point where she could not write formal letters; this affected her career progression. SB strongly believed that assessment of academic work could, quite reasonably, happen through aural means, visual means, role-play and interactive technology. She felt these were ways of learning and assessment: 'It helps to open up those receptors to learn, to absorb more'. SB talked about standardised assessment which did not meet the learning needs of many people. She gave examples of her own professional work, as a trainer, which was to assess people through observation of role-play and group discussion.

When SB was asked about the key elements of her dyslexia linked to her creativity, she thought it was differences in thinking that did not build on the norm; the way she could innately build relationships between concepts and emotions. SB said the way she problem-solved was to reflect and then connect to music and emotions. When she intuitively worked with her music this helped her conceptual thinking. Her strategies were to connect to a consistent piece of sound or to intuitively work with her own creativity:

‘Silence has a sound, thought processes are noisy and allow things to become calm and at a slower pace, to be softer. I find London difficult to live in because of all the noise and I have to process everything. I am always having minor accidents due to this processing’.

Case study LC

LC said he avoided anything difficult such as learning a language. He talked about reading ‘stuff’ as looking at sounds not actually reading the words. Each word had a particular sound and if the sound was not familiar then LC found this hard to read. Instead he could visualise words as one entity quite easily. To LC it was ‘tricky’ to get the words and sounds to link up. ‘If I do not recognise it I cannot make the sound’. Later on in the research ‘familiarity’ became a consistent reference point for LC’s creative work. Dyslexia had shaped his life by avoidance of things and only steering towards what he thought he could do well. To be able to read LC needed to know the sounds and understand the context. Aural questions were the best way for him to understand signposting or guidance:

‘I cannot digest what is being said in text if written in a way I cannot understand; much of the time I work it out by doing it, for example, handling machinery’.

LC thought that information would be much more accessible if visual with videos, podcasts and online visuals. When growing up, writing and reading were difficult and therefore LC moved towards visual work and developed his creative thinking in this way. He found YouTube was really helpful as this method showed you how things worked.

His coping strategy was to avoid doing some things altogether yet source the ways of getting information that were conducive to his way of learning. LC wanted to be an inventor; he felt he was in transit between places most of the time and he wished to capture this experience to make it real. 'My experience and the images are about how I see the work'. When he was at school and then college, he found during his 'A' levels that he could not process the information: 'it all fell apart'. He did not have time to absorb the information and so he would try to repeat it over and over again until the information would stick in his head. LC's visual images were the way he developed his creativity, learned new information, captured information and made sense of the world. The nature of LC's visual practice is photography and film. This way of working connected him to his environment: landscape, urban scape and people. He was constantly learning by working with and challenging the equipment he used. Capturing these visual images all the time allowed him to make sense of his immediate world and to store a record for his memory recall.

Case study NM

NM felt he could not 'disentangle' his character from being dyslexic. He said that when growing up he had low expectations and felt mostly like an outsider:

'For the majority of the time I had no real regard for myself as someone who could articulate, yet I did have a clear vision of who I was and what I wanted to do'.

The impulsive nature of his thinking meant he would constantly want to follow lots of directions. Yet when he started to work in this way it would be a slow stage-by-stage process. When he was 20 years old he took ownership of his learning; prior to this he thought he needed to apologise to the world. It was really important to NM that he was comfortable with who he was. NM did not want to be like his father who was embarrassed by his dyslexia. From the age of 20 years old he started to work with his strengths by using visual and aural methods of learning. NM now knew his mistakes when he made them and had taken responsibility for ensuring his own wellbeing.

'I do not jeopardise my capabilities; I eat well and try to sleep and balance lots of things. My wish is to relax safely'.

NM had three whiteboards to keep his life on track; one for the day, one for the week and one that was generic. This was due to his limited short-term memory and why he placed rigid structures within his life and artwork:

'It is OK to get rid of structures as long as I know the structures in the first place, I need to know how. I need to work as an artist'.

NM felt that if he relaxed things could go 'terribly wrong'. He said he was relaxed in his practice as he had placed structures within his creative work. Yet the abilities he attributed to creativity were to be able to have subversive responses and to have a journey of self-discovery. He thought that arts education was not about academia but about giving people space to be able to learn about themselves. To NM academia was contrary to this. NM talked about his visual work as extremes of emotion, fractured stories that were not linear and had no resolution. 'I am in search of something; longing in anticipation'. Much of NM's imagery depicted isolation, loneliness, snapshots of memories and moments that portrayed emotion. His work was symbolic, influenced by writers and poetry and life experiences:

'I am interested in identity and how we interpret our own appearance; the ability to go through the mirror, the looking glass as a space that is peaceful; a limbo space'.

Case study KH (the researcher)

For objectivity, I was interviewed independently and therefore I am referred to as KH. KH spoke about dyslexia linked to a keen sense of justice. Because most dyslexic people have had quite complex and difficult times in their lives, in education, the workplace, their own families, she believed that many dyslexic people could not abide unfairness. She talked about the straightforward nature of many dyslexic people due to their difficulties with memory, thus they had to be

this way to be clear about information and contexts. KH viewed dyslexia as being a nebulous thing to others but to her it was a gift:

'You end up asking straightforward questions, it does shape you; you either sink or swim'. 'I think we are all different. But the nature of dyslexia is interesting because there is a tendency to think in an entirely different way'.

The randomness of her thinking, by going off at tangents, meant she could map reference points and make links. To do this meant she could understand contexts and concepts quite quickly and this in itself was creative. When she was growing up she found the only way she could remember and learn was visually with her photographic memory. When studying for her 'O' Levels she could only pass these exams by photographically memorising each page of her books. In the exam KH could then turn the pages over in her mind to get to the piece of information required to answer the question. Much later in life KH recognised how she could learn in many other ways such as discussion to trigger ideas, through the production of her visual practice and by the interpretation of metaphors and analogies:

'Discussion is about activating thought processes that later will have meaning through visual connections. In the beginning I used visual thinking and as I got older I developed my abilities to verbally articulate'.

Once KH had entered arts education, at a higher level within the Royal College of Art, she knew that her learning space was vital to her creative development. This environment gave her space and made KH more critically aware of her creative thinking and encouraged her preference for asking questions. In arts education KH found, for the first time, that she was expected to explore, question and challenge; a way of working that was not necessarily conducive to the workplace later in life. KH thought that there were 'unique features' of the creative arts which could be transferred to other subjects: the uniqueness of the tutorial system, the sharing of ideas, and the learning space to develop at one's own pace of thought.

Predominantly she started as a draughtswoman who now worked in a range of ways to articulate ideas. 'I spend a long time gestating and then I have a spurt of energy'. KH has worked in a range of multi-dimensional media from printmaking to glass. Glass is an area of work incorporating patterns and rhythms in space. In the main her work is symbolic using layered meanings to build up the whole visual image.

4.2.2 Second interview sessions

This series of interviews covered the artists' approach to their creative production. Some of the questions framed were: How do you capture your thinking? What fires you up creatively? Do you analyse while in production? Where are you going and where have you come from?

Case Study SB

For SB the production of music was related to emotions and these emotions or feelings influenced her work. The work was produced through the voice with several projects at once, often resulting in a series of films:

'Influence is through external happenings that generate an emotional response then words that link with a melody'.

All the thoughts and feelings SB generated were externally verbalised, this was through words then song and rhythm to create a piece of music. The words came out as speaking to understand thoughts, then followed on to musical thought. The process made SB see more clearly:

*'The gap between the action of happening and verbalising is the analysis'.
'Creativity is without boundaries'. 'There are sparks of thought with a tempo that have an impact. The creativity part is the way the thinking and reaction is manifested externally'.*

SB needed to make sense of things happening in the immediate environment. There was a liberation and release of energy, also recognition that the

harnessing of this energy was important to make sense of the piece of work. SB wanted a system by which there could be reflection and analysis. She felt she needed to plan constantly to fit into 'normal society' (see Glossary, p. 294). For SB, to realise this energy was to have a real emotional response to an external happening. 'Creativity is being myself and throwing my hands out'. She had a system by which thought sparks were captured through others, otherwise these sparks filtered off and away from her immediate thinking and memory. It was essential to SB's process of capturing thoughts that she worked with others who were intuitively compatible with her responses, ideas and thinking.

These moments were entirely spontaneous, so colleagues, friends and family would capture these moments, by using their mobile phones, as she did not have time to write before they went away. She did not have control of her lyrics and to SB this was how her creativity happened. 'The problem is that so much can be lost unless it is captured immediately'. In the absence of people to help her she would have pens and papers all around her to capture her words. 'If the spark is captured the melody will come. It is very fast processing'. SB has to be busy to energise these sparks, yet being busy would lead to loss of these sparks (see Glossary, p. 295). It was a cycle that could be frustrating with feelings of working against time. To address this SB will try to focus on one thing at a time.

Case Study LC

Discussion centered on LC's compressed-time film, which had been filmed over a one-month period. The discussion was about concepts of time and the capturing of different time journeys to gain the reality and awareness of a place. How to do this was the challenge as he wanted to capture lots of information and come back continually to the same place to gain greater knowledge of detail and situation, 'capturing more stuff than you can in one go'.

An example of this thinking was the train journey from Edinburgh to London that LC filmed over six hours. The interest for LC was the route that never alters with the journey captured either side of the capsule of time that he inhabited. His real interest was in space and time and where he was placed in this to enable reality and awareness of the actual movement. The process of filming enabled him to store information to remember 'journeys'. In capturing different moments of time LC would return to the same point many times to find new areas he had not seen before. LC made reference to a third eye. This eye was the reflective and analytical eye, 'to be able to get the gist of what is happening'.

He was interested in being able to repeatedly look at the same area so as to see new elements and be able to remember them. He was particularly interested in the traces that people leave behind them. Referring to movement as a musical instrument, this repeated seeing made up a whole for him; the impressions went into his brain in an unconscious way. He felt he did not really get familiar with anything he did. There was a detachment to his way of seeing and being, as though he was trying to gain a sense of things around him. 'Do I look or do I analyse?'. He felt he just looked and did not analyse; by the action of doing he was capturing information. He liked to set up scenarios, as though providing a timeframe for information to happen. Landmarks were important to him, those that were obscure, strange, not populated by people. The experiences he stored were to get more ideas about where he was going. 'I never really know where I am going until I get there'. He wanted to hold onto his experiences as though to fix them in one place and to then be able to share with someone later.

Case Study NM

For NM drawing was planned and his painting was the culmination of the planning. All his work took a very long time due to intricate detail, for example, his painting was derived from the long process of drawing as drawing was the tool that enabled NM to think. He had lots of drawings in sketch form as he saw drawing as a series of mistakes.

Creativity, he felt, was in his drawing as this was more impulsive. This enabled NM to define his painting ideas as his painting was produced in stages and always completed at each stage. The sections of the painting were rendered often quite separately. His approach was to start with the main image then create the foreground and then background. The painting was much more pattern-based rendering one section at a time. If a mistake happened while painting, NM was very philosophical about it. The process of painting stopped him going back. To NM it was a relief to produce painting that was fixed and staged. Imagery was created from a collection of objects NM sourced and put together. His work was about the perfection of high detail; 'the aesthetic of detail'. The meaning behind his work was mainly around solitude, the unanswered questions of the human condition. One painting was about psychological salvation.

NM analysed all the time and said it was too much for him. He was interested in what things conveyed, the narrative of the image was the words for NM, words, which he felt, were too hard to convey. He was interested in the power of symbols and what they meant. NM strove for completeness in a work that was accurate; work that explored what it is to be alive. Painting was a chapter of something much bigger. However his works were all made with feelings that had links to each other.

Case Study KH (the researcher)

To KH drawing had been the starting point for her creative practice. This had changed greatly over the years to include a range of ways of working from 2D, 3D to 4D (see Glossary, p. 293). Space and movement had become part of her work. Her approach to her work was intuitive and at times random. The work had to have symbolic multi-layered meaning. KH was fascinated by complex messages that could have different meanings for different audiences. This layered approach gave a richness of depth to her ideas. KH would go with the flow of thinking when producing her work knowing that there would be links to be made later.

'I trust myself with the images I use knowing that they will make meaning later on. I am edgy about my work but deep down I know where I am coming from. It is a really useful thing to be able to do'.

KH worked by observation, action and reflection. It was all about meaning and experience, working out links by touching on reference points in her mind. KH would capture her ideas first and foremost by visually remembering. Dreams could be very important to reveal contexts, often about life journeys:

'All my pieces of work are about journeys, life and death, experiences. I have started to dream in colour; before this I only dreamt in black and white'.

4.2.3 Third interview sessions

The third set of interviews happened from February 2011 to April 2011. The interviews were followed by two case study exhibitions that took place in October 2011 and October 2012. This set of interviews acknowledged the artists' reflective approach to their creative production and a growing awareness of their different perspectives of thinking and working.

Case study SB

To SB creative musical practice was about managing her emotions. The sounds, and time linked to sounds, were essential to her. She would input meaning and context to her dialogue by giving it a tempo, searching for peace in her music. Unlike the other case study people, she had an urge to fit in with society, she felt keenly that she was not socially acceptable. She wished to be part of something yet did not feel able to conform:

'I have learnt that everyone is different and although I am disturbed by change, it is the constant thinking that enables creative production, so change is important to the way I learn and what comes from learning'.

Her way of managing her creative output was through melody, music, poem-songs and film. Total silence was not possible and her creative work was the outlet for change.

Case Study LC

LC talked about wanting to be an inventor. This statement had repeatedly come up during our other discussions. Throughout the third session with LC he talked about his disappointment that although he had come up with innovative ideas he had not been able to put them into practice. He was very aware that he was able to create concepts that were a new way of seeing but did not have the resources to put them into practice and thus the resources to articulate the idea to an audience.

He was fascinated by positioning ideas within new spaces and the ability to put images in different contexts 'to see them in a completely different way'. He talked about spaces to be filled. LC would talk about his foundation year quite often, this year seemed to have been a time when he was given the educational freedom to explore his creative practice without having to produce a finished piece of work. To work with limited sources was a challenge to be creatively navigated:

'You never know what is going to happen. Never convinced that I will ever produce something reasonable'.

The idea that it was okay for creative practice to disintegrate as part of the practice was a concept LC was investigating. He referred to the creation of a library:

'You capture stuff as you go along and then come back to it and you have this pool of things you can work from'.

The important thing for him was the originality of the work. There was a documentation of ideas that informed his creative perspective. He was proud

of the fact that he never repeated his ideas. The important element was to continue to make his work, otherwise ideas became static and there was no momentum. 'To do work that is not mainstream through making ordinary things and seeing the value of ordinary stuff'.

The newness of ideas was key to his creativity, yet there was a frustration due to the lack of resources that stopped the flow of his ideas. Three-dimensional (3D) imagery as a progression from two-dimensional (2D) imagery was fascinating to him, for example his time-lapse work.

He was always playing catch-up, capturing moments and feelings within a time-frame. Making ordinary things look extraordinary. Changing ways of seeing through a range of dimensions. Moving the idea onto something else: 'Once you get there, you kind of see it, but there is always something else'.

Case study NM

NM was keen to have parameters around himself and wanted to have a time frame. He thought that this would focus him and give more dynamism to the production. This would enable greater access to his ideas with more freedom to have a creative dialogue. When I first met NM he would produce work in stages with an almost rigid approach, even to the point of a linear style working across the canvas. By the second session with NM he was painting by plotting areas across the canvas rather than in a linear fashion. These were highly detailed images placed 'randomly' around the canvas. Yet this was not random, NM had considered every single element of his production. By the third session he was working faster and with more immediacy:

'I want to have an immediacy about working to a specific time-frame, it suits the multi-dimensional content of my work, I want to run many narratives or scenes that overlap one another. I want to make work that sidesteps authorship of the sense of personal involvement of the work'.

Rather than being immersed in his own narrative about growing up, experiences and relationships, he was now interested in a psychology to do with a collective experience and where this was placed in a social context. He had opened out to include a dialogue with others that was ongoing. He now immersed himself in collaborative performances and exhibitions. From an isolated perspective, NM had dramatically moved to a collective dialogue.

Before the third case study session with NM, I had visited him at his collaborative exhibition in Hackney. Following this, during the setting up of the first research exhibition, I had viewed a video of his choreographed performance in Trafalgar Square, which focused on religious experiences as part of non-religious life. He was fascinated with the experiences that human beings have that are inexplicable. His work now looked at iconography and religious beliefs to explore the human condition. 'I do not think that any events in my life have led me to be an artist, but all have'.

What became apparent by the final session was the fact that NM had been working in collaboration for many years with another visual artist yet he had not recognised the value of this. Now and more recently this collaborative work had been extended to others with collaboration on the actual creative practice rather than a dialogue about the creative practice.

NM had moved from 2D production to work that inhabited space as 3D and 4D (see Glossary, p. 293). He was now including movement, time and space with his visual practice. He now wanted to create images that contained movement and captured events that were about to continue. He wanted the potential of an image, as though frozen in time, to create scenes that unraveled to the viewer.

Case study KH (the researcher)

KH had a thirst to learn new things and spent much of her time investigating different ways of working, hence her subsidiary subject in glass, which finally led her to the Royal College of Art. She moved from 2D to 3D design by

working with light, space, colour, texture, shape and structure within an environment that could be connected to human scale and to the human condition. On reflection, within this research, she realised that she had navigated her way through arts education, and later employment, by a series of action-based investigations. Value in itself was an interesting concept to KH as later in life she realised that values within organisations were often fixed, with little room for experimentation or thinking leading to action. The education and training received at art school was diagnostic and embedded within a philosophy of personal investigation and just did not sit well within corporate thinking. At the Royal College of Art, she was safe in the technique of glass production but became too linked to this way of working. Over the years, her work increased in size and colour.

Her approach to production would often start from thoughts and ideas viewing a series of situations over quite a long period of time. Her work is symbolic, using imagery that represents other meanings to bring something of an uncomfortable juxtaposition of images that convey several levels of meaning. This is about the human condition and the strangeness of the world we find ourselves inhabiting. Dreams are a particular source for interpreting meaning. During the process of the case study research her work has become larger and more colourful. KH said she never really has a fixed way of working; it evolves during the time of production. The first visual creative piece for the research work was called 'Still Flying' (see Fig.9, p. 124).

4.3 Summary of the interview stages

Throughout the three sets of interviews there were emerging and connecting themes covering: ways to gain meaning, the artists' observations and connections, the importance of the human condition, and the artists' different ways of thinking to creative production. For all the artists their dyslexia was part of themselves that they accepted and that some celebrated. Their strategies included working with sound, movement, visualisation and concepts of time and space. These strategies were to come to the forefront of the discussions and practice as the research progressed.

The main themes were:

- The ability to position ideas within new spaces (change)
- The ability to have an immediacy of action within a specific timeframe
- The reaction to time and space as a series of changes
- The ability to recognise emotion as meaningful
- Experiences made tangible
- How to activate deep meaning in thinking
- Structures/rules or parameters to contain or maintain ideas
- Knowledge evidenced through analogies, iconography and symbolism
- The human condition

The first set of interviews had revealed a clear sense of justice amongst the artists due to their life experiences connected to the challenges of their dyslexia. They had developed strategies for managing day-to-day life, education and work. All the artists had devised ways of remembering and capturing information and thought processes. This ranged from the use of sound to remember emotions, to movement and visuals for capturing ideas and understanding concepts. All the artists acknowledged that they felt like outsiders in society. They were different and many of their life challenges had been about how to fit in and position themselves in structures and systems they did not comprehend. They had managed this by either avoiding difficult situations, isolating themselves, quietly observing or developing a set of strategies that gave them some meaning to explore and meet some of the challenges they had faced.

The second set of interviews explored the artists' thought processes around production and how they were positioned within their practice. The discussions revealed a richness of strategic thinking. For example, the use of emotion to create change and interpret their responses to their immediate environment showed a strong understanding of tangible and non-tangible connections.

These interviews showed that the artists could integrate their inner and outer worlds: the inner world of their thinking and the outer world of influences drawn from their immediate environment. During these interviews the artists' discussed ways of making meaning happen for their creative energy. The concept of 'spark moments' was discussed, of journeys that were relative in impact of experience irrespective of length of time travelled, landmarks that had symbolic references and fixed marks that rendered layers of meaning.

The third set of interviews reflected on the change and flow of the creative practice. The artists' recognition of their way of thinking had been discussed and reflected on to move forward to new ways of thinking to production. The interviews revealed a set of dyslexic artists who explored meaning all the time. They were restless in their questioning of their creative practice. They showed the ability to think and work in a range of dimensions that included visualisation, movement, sound, space and time. Although all the artists had talked about a sense of isolation, of being the outsider, when they discussed together as a group they collaborated with a tacit knowledge of their practice, life experience and their dyslexia.

The interviews had highlighted the possibility that the artists could think and work in a multi-dimensional way to reveal new ways of thinking and seeing. Specific examples were the films of LC, the sound spark moments of SB, the overlapping narratives of NM and the symbolic layers of meaning for KH, which included reference to dreams. These were indicative markers toward multi-dimensional thought, a notion to be fully anchored at a later stage (see pp. 196-7). The case study interviews showed that the participants increasingly collaborated and found a voice for their exploration. Following the interviews the case study artists transferred these discourses and collaborative work to the research exhibitions. The purpose of the exhibition collaboration was to evidence the multi-dimensional thinking that can occur during production (see Fig.12, p. 130).

Chapter 5: Case Study Exhibitions ‘Ways of Thinking’

5.1 Introduction and research focus

The main purpose of the research is to investigate dyslexic thinking approaches to production in creative practice. A substantial element explores these approaches through dyslexic practice. This is investigated in Chapters 4 and 5 to establish the research focus for the comparative analysis and data collection of dyslexic and non-dyslexic artists in Chapters 6 and 7. Case study interviews took place from April 2010 to April 2011. After this time the exhibitions were the focal point for the case study artists with the period from May to September 2011 being the planning stage for the first joint exhibition. As part of the mixed method approach, the case study interviews provided a contextual basis from which the exhibition could be articulated. The purpose of the exhibition was to provide a forum for thinking approaches to production. Hence the exhibition titles ‘Ways of Thinking’ and ‘Ways of Thinking 2’.

The artists showed an ability to map thoughts, at a tangent from a range of spatial and time frame perspectives. The literature review considered that theoretical perspectives within mainstream education informed a variety of thinking approaches to creative learning experience. The exhibition practice showed that the case study work had developed through a greater exploration of methods of production. Evidence for the multi-dimensional approach emerged during the case study interviews and was further explored during the case study fieldwork (see Chapter 4), the two case study exhibitions, peer observation and my comparative observations.

During this stage of the research the multi-dimensional thinking approach to production became the research focus; the ability is to think at the same time in several dimensions to produce creative practice that is set within multi-faceted contexts (see Glossary p. 294). These contexts include the integration of the inner and outer worlds of these artists to produce creative work in a range of integrated media.

Thus the research purpose is to investigate dyslexic visual artists' thinking to production. The research therefore presents the investigation visually, evidencing a range of research images. This chapter presents the visual work of the two exhibitions. Word clouds were used as a visual way for the researcher to analyse and make sense of the stage one investigation (see Appendix P, p. 333). The weighting of emphasis of the words gave a visual narrative to thinking approaches and responses made by the artists. This approach is further explained in Chapter 6 (Stage two) where the visual word clouds become a tool to analyse the 40 survey responses. The exhibitions were an important element of the research as this work puts into practice the thinking and discussions drawn from the case study interviews.

John Berger's discourses on ways of seeing, constructed by how we see or are allowed to see, were influential as a seminal early dialogue on visual discourses (see pp. 41- 42). Berger debated the kind of seeing that images invite. In Essay 7 of *Ways of Seeing*, he discussed the surge of visual images that are predominately within the environment and impact on our thinking and behaviour. These discourses were influential for the researcher, as curator, and to LC who devised the flyer for both exhibitions.

5.2 Curation of the first exhibition: October 2011

Prior to the first exhibition, 'Ways of Thinking', there were three meetings where planning was discussed and agreed as a team. The artist voice was paramount and to ensure that this happened, each artist was given an exhibition week devoted to his or her work. The first week of the October exhibition was a group show to introduce the research themes. The research focus was discussed with the artists and they were given the following brief after the August 2011 group meeting:

'You will now have the whole space; create a space which focuses on your experiences and creativity, evidencing the multi-dimensional way your thinking approaches the production of your work'.

‘Ask yourselves three honest and open questions about your way of thinking (reference your latest transcriptions if you want). Use those questions to evidence your work. When we meet, can we have an idea of what we are producing or will produce?’

These three questions were framed following the analysis of final case study sessions and from the exhibition discussion meetings. These questions subsequently informed the questions posed within the design of the qualitative and statistical elements of the survey (four months later).

- 1) What are the multiple approaches to thinking?
- 2) How does my thinking inform my creative production?
- 3) How have I developed my learning and what journey have I taken?

The exhibition was a changing exhibition with the researcher as the main facilitator. I curated the exhibition as part of the participatory research inquiry. Throughout the organization of the exhibition all the artists collaborated as a team. This happened without any formal discussion about roles or responsibilities. The first meeting of all the artists took place on 24 May 2011 to agree the exhibition as a collective piece of work that would articulate practice as part of the research project. Other meetings were on 2 August and 6 September 2011.

The August meeting included all artists and agreed the format of the changing exhibition. The research was revisited with discussion about the key research questions. I provided the transcriptions of the interviews to each artist with an analysis drawn from the second interviews (see Appendix L, p. 328). By the August meeting, the artists had received all interview transcripts, summary of analysis drawn from the second interviews, visuals as word clouds (drawn from the third case study interviews) to provide greater emphasis on the key words to come out of the third set of interviews (see Fig.3, p.112).

The overall purpose was for reflection on the research questions in keeping with the context of the research. We had agreed to have separate times within the exhibition period for each area of production. However, we were also careful to work together to agree how the organisation would work and to discuss the content of each area of work in terms of approach, thinking and production.

The changing nature of the exhibition followed the format of eight days devoted to a particular area of work. This meant that there were three changes of exhibition all devoted to portraying two, three and four-dimensional work (see Glossary p. 293). By August the artists had changed the production of their work by working flexibly with a range of methods and reflective analysis.

For the production and setting up of the exhibition, I asked the case study artists three further main questions:

- 1) How does my thinking inform my creative practice?
- 2) What strategies have helped me to develop my learning?
- 3) What are the multiple approaches to thinking I have engaged with?

To keep to the context of the research, each area of work had the research focus outlined as a poster. The artist feedback to the questions posed formed a collective poster represented within each exhibition area (see Fig. 4, p. 114). This provided context to each changing exhibition in that the work could be referred to the research, for example 'where has this come from and where is this going'.

The impact of Dyslexia on learning and creativity in the visual arts

What are the multiple approaches to thinking?
What have I engaged with?

The journey has helped me to learn that creativity takes time and can never be planned. Through my work I endeavour to reach a sense of chaotic harmony or resolution through an arrangement of fragmentary ideas and/or materials.

I mostly think on my feet. I need a good idea of what the final parameters are, the time frame in which things need to be completed, then I try to create something within that space.

Case Study Perspectives

How does thinking inform creative production?

Everyday different experiences occur and a way to analyse these events is to think about their meaning and their impact on either others or myself.

However the only way to manage the output of thinking is through music, melody poem, and song.

I have found it useful to compartmentalise my work and ideas, creating projects or environments in which to focus on specific narratives or concepts.

I always learn better from actually practicing whatever I am trying to learn. Repeating it over and over.



Exhibitors

Shevonne Bryant
Katherine Hewlett
Leon Cole
Nick McArthur



Fig. 4. Exhibition Poster 2011

By the third interview session, dialogue with the artists showed a greater interest in collaboration. In one case it was revealed that one artist, NM, had in fact been collaborating for several years with another artist, however as this collaboration had evolved over a long time the work was not seen as collaboration. This collaboration manifested in an exhibition in Hackney in May 2010. Both artists were interviewed and it became evident that each informed the other with ideas that drew on similar views of the world. Both artists collaborated in a multi-dimensional way using the interior of a shop as the space for a complex installation that recreated the human condition through different spatial contexts. The nature of the artistic production had changed from one of separate discourse to one of collaboration. It was noticeable during the research exhibition that all artists intuitively understood each other's work to produce an exhibition that had continuity of planning and creative energy whilst keeping focus on the research. This was shown in the choice of exhibition title. The artists were keen to make sure that the research was explicit in the title (see Figs. 5 and 6, pp. 116-117).

The group-show continued for the first two weeks of the exhibition period; the researcher agreed to include LC and SB with her work. The second two weeks were one person shows. The visual artists needed little discussion during the setting up of the exhibition. There was an understanding of the use of space. The human condition was a running theme through the work. Through use of a range of media, emotion and containment of emotion were dealt with, for example, the time-lapsed film of LC having his hair cut and his solitary walk after the ritualised event. Emotions were dealt with in elaborate ritual in the Vimeo film (Hewlett, p. 290). Death and life dialogues happened through use of metaphors. Changing images evidenced changing states of mind. No verbal comment was made; rather there was a series of images with sounds punctuated by silences.



WAYS OF THINKING

Katherine Hewlett

**Multi dimensional thinking in creative
practice:
The impact of Dyslexia on learning and
creativity in the visual Arts**



The research study of Katherine Hewlett

Fig 5. 2011 Exhibition invitation



WAYS OF THINKING

KATHERINE HEWLETT



**Positioning ideas within new spaces - The
impact of Dyslexia on learning and creativity in the
visual arts**

**Multidimensional thinking in creative visual
practice - is this of any value to mainstream education?**

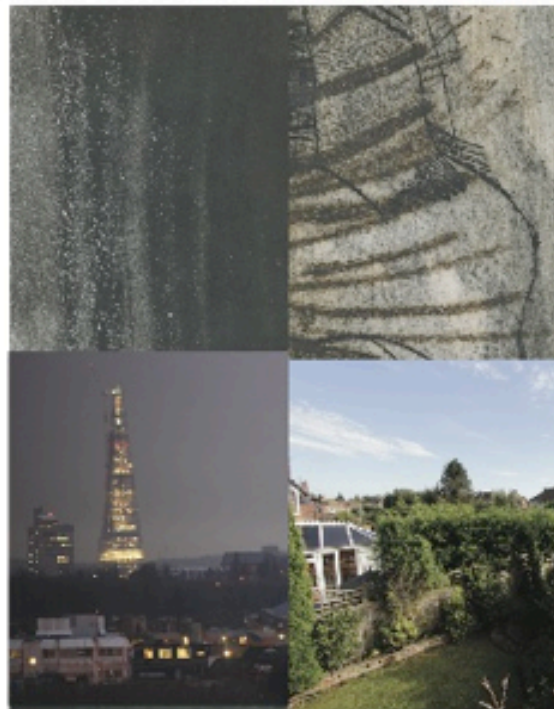


Fig. 6. 2012 Exhibition invitation

The exhibition charted the relationship between one piece and another piece through pictorial content and colour. The symbolic use of colours was echoed through to the finished artwork. Images were connected conceptually by connecting and questioning the ideas of creativity and dyslexia. These were similar images that came about through different rendering.

Although the exhibition planning included three meetings, each artist created their work independently with little discussion with each other about the ideas. It became an intuitive process. As curator I was given information about progress made. This was more about the logistics of setting up than an indication of work in progress. Work happened as a process of collective thinking, albeit at a tangent. The actual setting up happened over three hours by silent agreement without any concerns for the particular identity of a particular piece. There was a sense of a shared language that was creative and understood at several levels:

'It is as if I am speaking a completely unknown language... however, to work with other dyslexics there is much less translating to do'

5.2.1 The artists' view of their own work

KH's work was a triptych of journey from 2007 to 2011. The journey crossed an uncertain terrain, with life and death experiences and greater knowledge acquired. This triptych was put together without an understanding of where it was going. It came from an uncertain place and moved forward uncertainly. It was only when the final part of the triptych had been produced that the reason for the work was understood.

The images had been drawn from dreams and the feelings from real life experience, about the taking of a journey that evolves into self-determination. This part of production was entirely progressive, with the thinking happening as and when influences and experiences were sourced; to move towards sense and linkage in terms of ideas. Later a set of prints were produced. Unlike the triptych, which was a process that evolved over a long period of

time, the prints were produced through the use of power tools on hardboard and printed as though etchings. This way of production was very immediate yet the process was key to production as the spontaneous mark making captured and contained the ideas. The four prints made up a whole image of the tip of a wing suspended in space:

'The viewer is suspended waiting for the next moment not knowing what will happen next. There is a sense of peace and of things being much greater, yet there is also a sense of suspense and waiting for the next happening' (visitor to the exhibition).

For LC his work was about active engagement. The audience was the observers invited to experience a special event or place. The 3D photography and films were about special personal moments and how identity is viewed within a contemporary and historical context. He approached the work as a time frame in which things need to be completed and set in place within a space. The foundations of his knowledge meant he could easily visualise a creative solution, however he could not explain this orally.

NM's exhibition work was a statement about the human waste in a transient world of unstable values; 'eat waste'. With this work he endeavoured to reach a sense of chaotic harmony with fragmentary ideas and materials. He created an environment that focused on a specific narrative. The exhibition work defined a set of individual objectives. The exhibition work was a narrative about NM's challenges in understanding the written word. Much of NM's exhibition was a visual and oral narrative about the chaotic waste of humanity. He thinks that now more than ever his practice is in a state of flux so that his preliminary work (so important to his creative process) will undergo more alterations by working within different media and ideas.

SB did not want engagement with an audience; she wanted to hide her creativity. It was so special it was to be hidden within her own personal journey. SB's filming for the exhibition evidenced her thinking through

changing shapes and objects floating on water played out in synchronisation with SB's voice making the sounds that added to the change and movement. She gave a narrative of her learning journey as a series of quick responses so that she could only produce her work with others as a collective. Her process of thinking for the exhibition was to become more academic in how she approached the production of her work: to reflect, analyse, evidence, test and compare. To be more structured was not second nature to her, yet this approach had subsequently helped her get through the day in the workplace. SB was often to mention the alienation of the workplace and the need to make music to provide a safe haven for her thought processes.

5.2.2 Audience feedback

Audience feedback was via the private view, observation of responses to the exhibition and ad hoc discussion at the exhibition. During the private view visitors were consistently observed for reaction to the pieces of work. Visitors were asked to consider where they were placed physically and psychologically in reference to the work. People sat in the space with ease. They occupied themselves with their own thoughts and concerns.

The whole exhibition had a sense of displacement, of an ethereal otherworldly nature. Where am I going? Who am I? How do I relate to this world? There was a common theme of journeys made. Moving from emotional place to place. The exhibition was a statement of the artists' emotions about their place and identity in the social world they inhabit. During the case study exhibition in October 2011 the visitors were encouraged to comment. Visitor quotes:

'There is a connection with all the pieces of work of disconnection and distortion. Symbolism is important with metaphors and analogies. A surreal quality is evident of the intangible and tangible'

'Thoughts come through your eyes. It is what you see with that is important then you start to think what it means'.

'The surface is about the emotional and physical damage that is done. Each piece could be separate but they work together'.

'There are links across all the pieces- there is something about creativity and intuition. To create the there and then.'

'There are marks and colours that are interlinked. The expressions on the faces and the eyes.'

'The re-occurring themes of journeys taken that are personal - to do with ways of expressing ideas, thoughts, identity.'

'A multi-dimensional exhibition that is different with sound, movement, space and active engagement with the pieces'

'Symbolic representation, that has a sense of foreboding through space, myth and fantasy. There is a narrative to be told.'

'Commonalities of identity, disconnection with the seeing eye.'

'It is about observing moments in time that can be extended or just fleeting thoughts flowing in time- things that are part of you and act as metaphors for journeys.'

5.2.3 Visuals of the first research exhibition

This includes all the artists. The case study interviews and exhibitions can also be viewed on the research Vimeo site (Hewlett, p. 290).

(<https://vimeo.com/user3398977/videos>)

The login details to protect the anonymity of the case study participants are as follows hewlettk_uk@yahoo.com password London

Ways of Thinking exhibition: October 2011

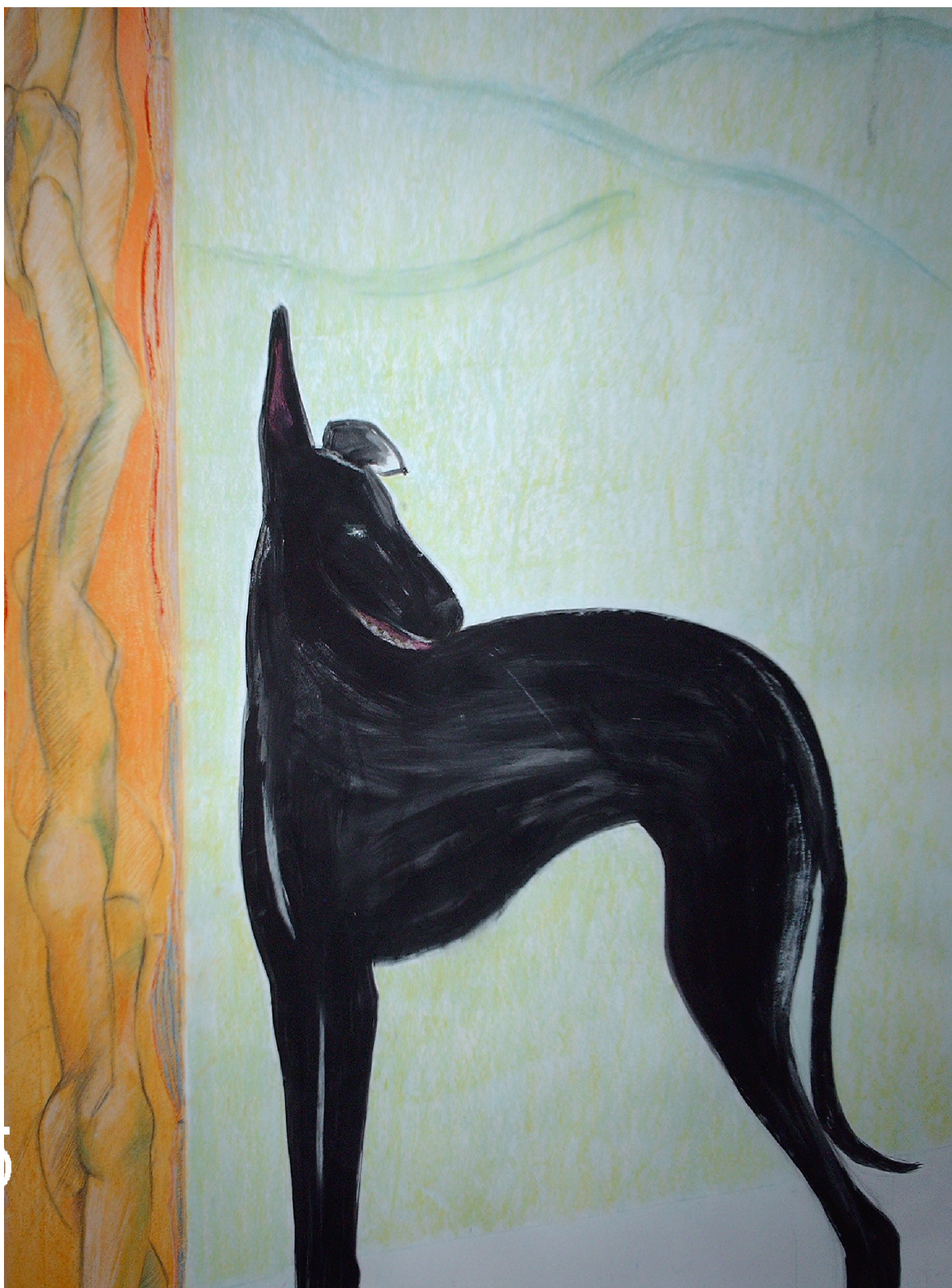


Fig. 7 Journey of Dreams KH



Fig. 8 Patterns of identity LC

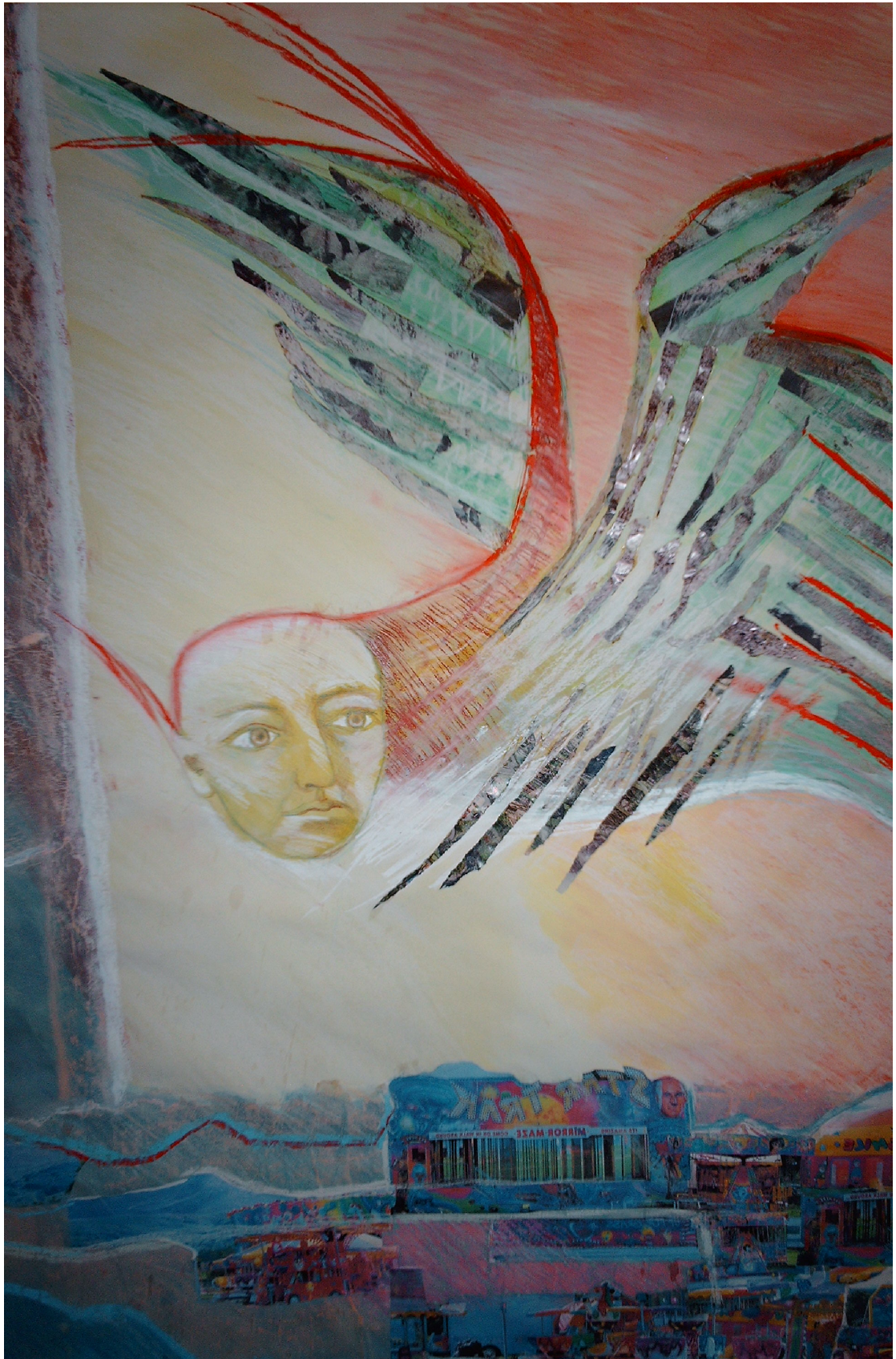


Fig. 9 Still Flying KH



Fig. 10 Crimson Tide SB



Fig.11 Lets Eat Waste NM

5.2.4 First exhibition summary

The exhibition enabled the case study participants to build on the formative experience of the interviews. Analysis of the interviews and transcriptions had been reviewed and fed back to each participant. The exhibition provided a forum for the case study participants to produce new work. Therefore the work was produced with new perspectives on thinking approaches to production. The audience participation and their informal dialogue corroborated or questioned the exhibition setting giving greater objectivity to the artists' practice.

The overall purpose was for reflection on the research aims. The artists had agreed to have separate times within the exhibition period for each area of production, however, they were also careful to work together to agree how the organisation would work and to discuss approach, thinking and production. It was noticeable during the research exhibition that all artists made a great deal of effort to understand each other's work and to produce an exhibition that had continuity of planning and creative energy whilst keeping focus on the research purpose (see Fig.4, p. 114).

The interesting aspect of the case study part of the research was the growing interest in collaboration. The language that had developed had become an tacit way of communicating: a coded understanding through a variety of formats, discovery, language and ways of seeing. As the exhibition artists, they did not need to talk; they observed and planned the production in a collective understanding. This tacit understanding meant that there is a tendency for dyslexic practitioners to identify themselves as a group through the mutual experience of communication learned during arts education, studio practice and one-to-one tutorials which develops a highly self-critical discourse. This theme came up in the subsequent semi-structured interviews that took place five months later from March to May 2012.

In all cases the collaboration has resulted in a change of direction. Discourse from the research interviews facilitated self-reflection and awareness of purpose.

Research collaboration through the case study and exhibition work showed that the exhibition could be used as a tool for exploratory work to capture the essence of creativity. Creativity is a vehicle for capturing the multi-faceted experience and finding the tools to do this. The process of doing this is intuitive and experimental and it is the approach to this process that is key. This is not a linear process as it is embedded within works of art and is bigger than any component part. It is the nature of the thinking, how do we know it and communicate it? One of the repeated statements made by the artists was: 'I do not know where I am going until I get there'.

Personal themes

Each artist had identified personal themes; for NM this is around cultural and religious obsessions manifested through performance and installations such as the use of a TV to show music videos and scenes to do with environmental waste (see Fig.11, p. 126). LM was fascinated by identities and how they are perceived. He manifested this by the use of timelapse films and LCD displays (see Fig.8, p. 123). SB needed creative collaboration to manage her creative output. Her work was her emotional responses to her environment. She used DVDs, mobile phone and videos to capture her performance for the exhibition (see Fig.10, p. 125). She explored dreams to interweave these with emotions from real life experience (see Fig.7. p. 122 and Fig.9. p. 124).

The exhibitions showed how practice was integrated as a whole approach. There was an understanding of the use of space. The human condition was a running theme throughout. Changing images gave reference to changing states of mind. The exhibition was an exploration of these themes. Therefore the dynamic of how the dyslexic visual practitioner might reason, make judgments and make decisions, either alone or in collaboration, was an unexpected outcome of the exhibition.

5.3 Curation of the second exhibition: October 2012

The first exhibition had used the space and juxtaposed four artists' work. The second exhibition was a whole space production linking ideas on conceptual thinking of two of the case study artists. The second exhibition included two of the artists, as the two other artists were not available; one had moved to Australia and the other had become deeply involved with his own practice. When it was time for the exhibition to be set up the two artists were quite clear how the imagery and sources would inter-relate to each other. Therefore the second exhibition was based upon one dialogue between the two artists, which explored the use of the whole space to include the audience, generate questions and feedback on perceptions of time and space within multi-dimensional thinking. LC and KH wished to include all elements of the space for optimum audience participation and to investigate the variety of responses to the work. Hence the use of floor, walls, moving images, stills, typography and print to convey the visual iconography of thinking journeys and moments of emotional response within time and space (see Fig.12, p. 130).

The approach to 'Ways of Thinking 2'

It was not until the exhibition was set up that the imagery was evaluated and discussed through audience participation. The audience was actively requested to question the artists. There were several echoes of thinking from each artist such as repetition and change of imagery to describe time change within a set position or space. Production included time-lapse imagery and prints. At the literal level they used techniques to capture information to make sense of a situation. The exhibition feedback covered journeys, symbolic representation, the human condition, reactions to space and time (see p. 120).



The Impact of Dyslexia on learning and creativity in the visual arts: Katherine Hewlett

- 4 case study Dyslexic participants
- 40 surveyed participants. Dyslexic and non Dyslexic
- 10 semi structured interviews. Dyslexic and non Dyslexic

Multi dimensional thinking in creative visual practice - is this of any value to mainstream education?

- Positioning ideas within spaces
- Immediacy of action within a specific timeframe
- Unravelling scenes
- Time lapsed images
- Emotion in working
- Tangible from intangible
- Tacit knowledge to explicit
- Parameters to contain ideas
- Dialogue that is multidimensional
- Iconography and symbolism
- Movement contained
- The human condition

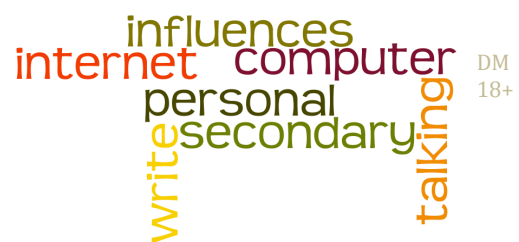
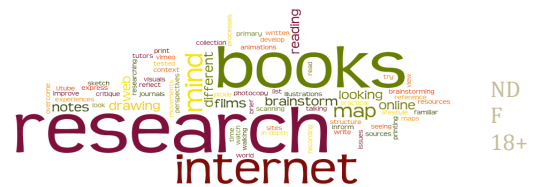


Fig 12. Exhibition poster 2012

For the second exhibition the researcher's own visual production was a set of prints placed together as multiple images to convey a deep line of movement around the room to then change into multiple lines going off at tangents (see Fig.24, p. 139). The line was a symbolic representation of thinking moving from complexity to linear to tangent. Sets of prints based upon a different way of thinking were produced to contain the image through the process (see Fig.19, p. 135 and Fig. 20, p. 136). Unlike the earlier triptych (first research exhibition) which was a process that was not contained but rather evolved, the prints were produced through the use of power tools on hardboard.

The exhibition space was utilised to provide an environment for these pieces to be shown on opposing sides of the space. The space was part of the conceptual thinking process (see Fig.17 and Fig.18, p. 134). The space between was an illustration of where we are placed within these views of the human condition. Visitors entered into dialogue and would note their reactions to the pieces of work and considered where they were physically and psychologically placed in reference to both sets of work (see Fig.15 and Fig.16, p. 133).

LC's visual production included time-lapse moving images within six boxes placed upon a series of photographs, which captured nanosecond changes to the experience of being there (see Fig.21, p. 137). It was often talked about as the third eye, the making sense of the world. In the past he had been very aware that he was able to create concepts that were a new way of seeing but did not have the resources to put this new way of seeing into practice. He is fascinated by positioning ideas within new spaces, the ability to put images in different contexts to see them in a completely different way. He talked about spaces to be filled. As a reflective outcome of the research LC now started to find new spaces to position these ideas (see Fig.22 and Fig.23, p. 138).

5.3.1 Visuals of second exhibition: *October 2012 'Ways of Thinking2'*.

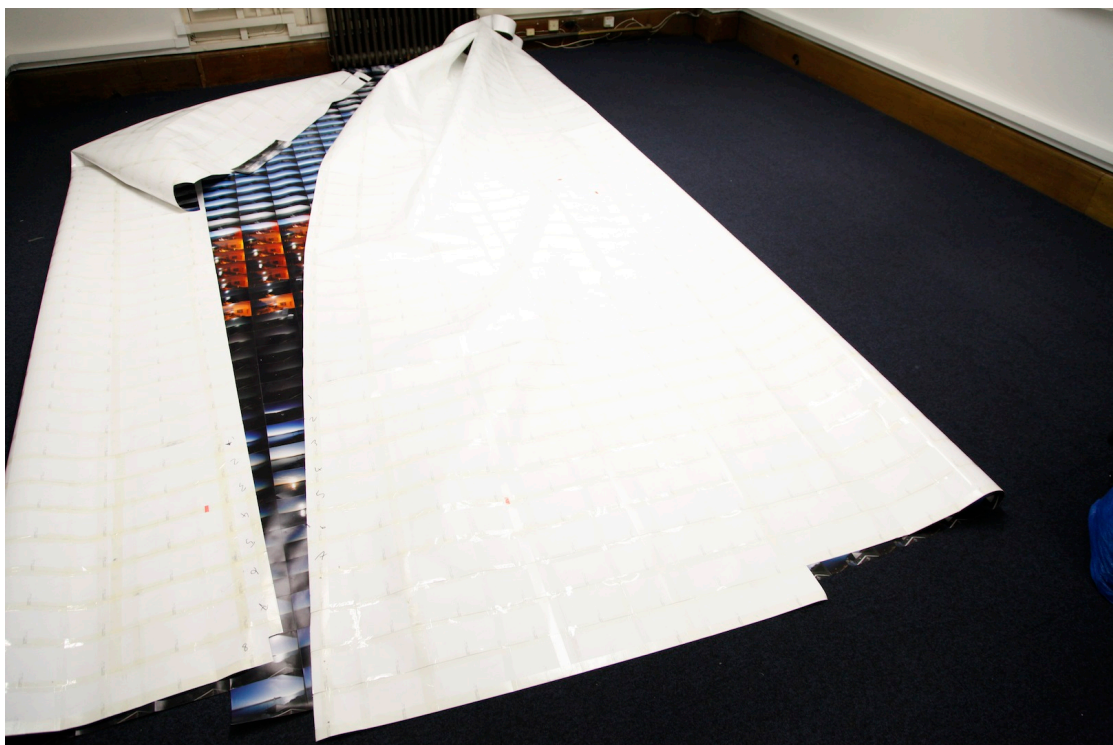


Fig. 13 Ways of Thinking 2

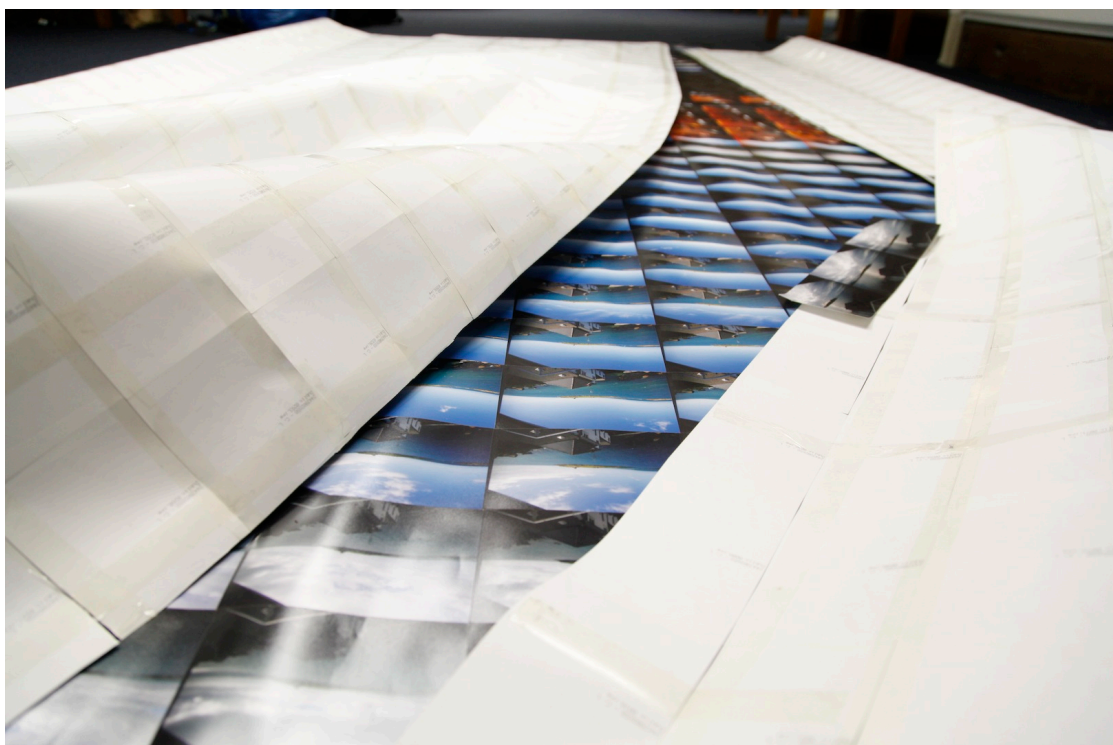


Fig. 14 Ways of Thinking 2 unraveled



Fig. 15 Audience as artifacts



Fig. 16 Audience as dialogue



Fig. 17 Thinking in space, time and movement 1



Fig. 18 Thinking in space, time and movement 2



Fig. 19 Marks in time



Fig. 20 Marks in space



Fig. 21 Nano seconds



Fig. 22 Ways of Thinking 2 reflection

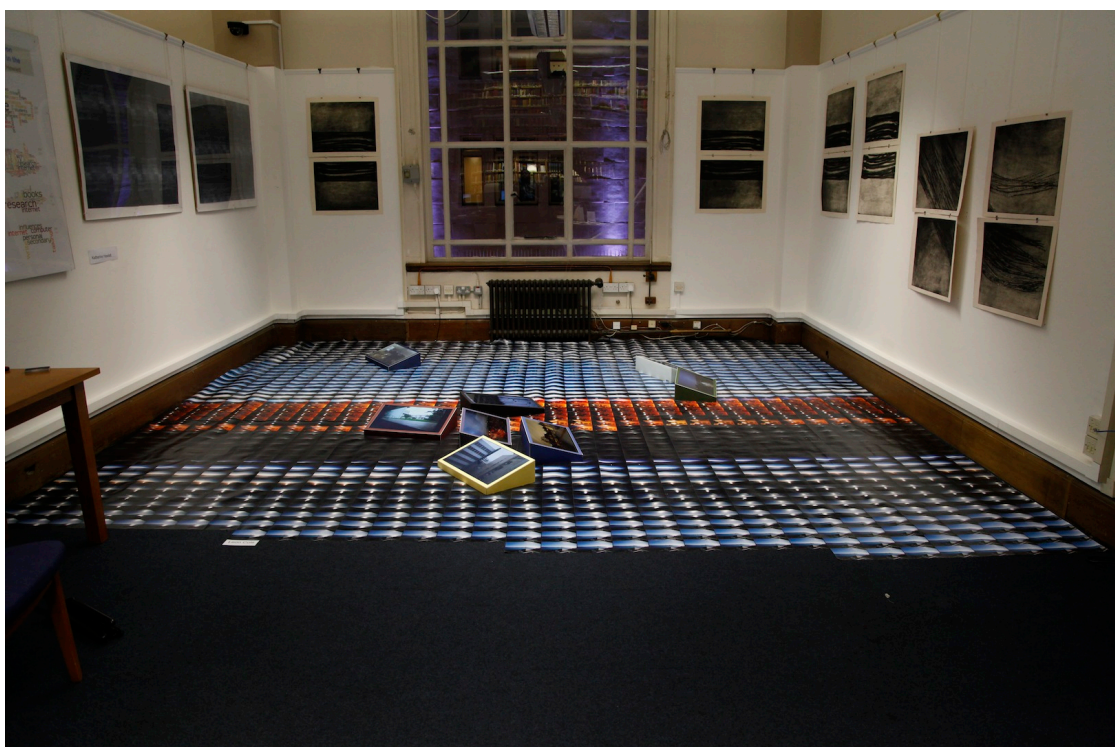


Fig. 23 Ways of Thinking 2 raveled



Fig. 24 This is what it is

5.3.2 Audience Feedback

The audience was asked to feed back on the research statements displayed on the exhibition poster (see Fig.12, p. 130). There was also a time-lapse camera running throughout the exhibition. The audience tended to be apprehensive about going into the space given the various positions of the images on the floor and the static images next to the moving images. At first they stood on the edge of the room concerned about damaging the photographs, if they walked on them, potentially tearing the paper. They were asked to take their shoes off and many hesitated feeling it unusual and strange to be doing this in an exhibition.

'It is as though we are being reviewed from all sides; construction sites do this all the time, they set up cameras from different positions to review the changes'

'The visual languages clash but are compatible'

'The prints are like holes in the wall opening to another dimension'

'Are you selling time?'

'Intrigued by how dyslexics interpret the world through visualisation to gain meaning'

'Is mainstream education of any value to multi-dimensional thinking?'

'Where does this thinking come from?'

'Why the use of time lapse work?'

'I did not follow each image in a logical way; instead I hopped from each piece. I was trying to figure out where things were placed, how it all interacted. I could interact with the time-lapse images and photos but not the prints. The experience allowed me to drift off '.

5.3.3 Summary of the second exhibition

The research focus had now been profiled at the first exhibition and at the second exhibition 'Ways of Thinking 2'. This second exhibition was informed by the earlier case study work and the work in progress of the survey with 40 visual artists at that time. Therefore the design, curation and dialogue for this exhibition was an iterative process. A useful finding from the first exhibition was that once general dialogue about the format and philosophy of the exhibition had happened, little dialogue was then needed for the dyslexic artists to work together.

Both exhibitions enabled the case study participants to further develop the research themes working with the formative case study work. Analysis of the interviews and transcriptions had been reviewed with feedback given to each artist. These exhibitions built on the analysis and provided a forum for the case study participants to produce new work.

The creative production for the exhibitions evidenced that there was a multi-dimensional approach to creative production with a mapping of ideas through a 2D, 3D and 4D format. These ideas became a discourse through a variety of mediums that reflected the thinking approach. The purpose of the exhibition collaboration was therefore to evidence the multi-dimensional thinking that occurs during production.

The second exhibition showed contrasts between two of the artists marked by different perspectives yet collaboration brought mutual outcomes. They both brought together work that was part of places or images. The parts made up a journey, a passage of time that was a way of looking. They had the ability to position ideas within new spaces, to change concepts and ideas consistently. The audience was invited to comment, thus one of the exhibition outcomes was to capture audience reactions to time and space as a series of changes within the exhibition setting, making the experience tangible.

Chapter 6: Fieldwork Stage two; the online survey

6.1 Context and background

The case study fieldwork and exhibitions provided valid evidence that dyslexic artists could have a multi-dimensional approach to creative production and that this approach was worthy of further investigation across a range of artists, now to include non-dyslexic artists. Therefore at this stage of the research non-dyslexic artists became part of the enquiry, to test the validity and reliability as a comparative investigation of non-dyslexic and dyslexic thinking approaches to creative practice. The research had included four case study interviews and observations to gain knowledge of the characteristics of dyslexic practice. This preliminary stage (Stage one) had also included two exhibitions as part of case study findings and to gain clarity on the research focus. The four case study participants had a voice through interview, group discussion and the exhibition work. This voice informed the development of the next stage of the fieldwork research; the online survey. The comparability study now sought to gain a range of different subjective and objective perspectives conducted through survey and finally semi-structured interviews for a deeper investigation of knowledge.

Following the case study exhibition in October 2011 a questionnaire survey was designed (March 2012) and sent to a targeted group of dyslexic and non-dyslexic artists. The baseline questioning and artists' discussions during stage one and the questions from the first exhibition informed the design of the questionnaire. Through this process the stage two survey questions were framed. These questions were: how does my thinking inform my creative practice? What strategies have helped me to develop my learning? What are the multiple approaches to thinking I have engaged with? (see Appendix A, p. 297). Prior to the first exhibition, the first set of case study interviews covered the artist's view of their dyslexia, their creativity, their strategies and experiences of managing life. The second interviews covered their approach to production. The third set of interviews reflected on the artists thinking to production. All the Stage one interviews were concluded by April 2011.

Thus the questions were framed from the emergent themes of the case study fieldwork and the first exhibition (see p. 107). This provided a comparative benchmark for the qualitative case study work as an 'ever evolving analytical construct, aiming to produce a cognitive map representing a person's or a group's view of the world' (Willig, 2008, p. 72). The survey questions were then critically examined by the team of supervisors for this research.

The survey, Stage two, ran concurrently with the period of time between the first and second case study exhibitions; October 2011 to October 2012. This meant that Stage one and Stage two became an iterative and integrated element of the research process. By the time of the second research exhibition (October 2012) a set of themes (see Fig.12, p. 130) had started to emerge from the case study interviews and emergent responses to the questionnaire (circulated March 2012).

The qualitative methods such as case study work, semi-structured interviews and exhibitions, were designed to be inclusive of the participant voice and to position the practice within the theoretical analysis of the research. Intrinsic to the action research approach was the close collaboration between the artist participants and researcher. The development of the research knowledge was practice-based and discourse-driven as an applied and strategic analytical approach to the investigation.

6.2 Introduction to the survey

The dyslexic artists will subsequently be referred to as 'D' and the non-dyslexic artists as 'ND'. Overall there were 40 surveyed respondents of which there were 28 ND responses. This comprised two male artists aged 18+, four male artists aged 25+, thirteen female artists aged 18+ and nine female artists aged 25+. By far the largest group were the female ND artists aged 18+. There were 22 female artists who responded compared to 6 male artists. In comparison with the D artists there was a much higher response rate to the survey, however this does reflect the percentage of the population who might be dyslexic, which is between 10% and 20%.

There was, however, a higher response rate at 30% from the D artists in comparison to percentage rates of dyslexics within the population. Interestingly the response rates for the D artists were fairly even gender-wise with five males and eight females responding.

Survey themes

The advantage of the questionnaire was that the participants could complete this in their own time. Questions were based within five sections, with the introductory section composed of closed questions including basic demographic data (see Appendix A, p. 297). The purpose of the questionnaire was to reach a wider pool of participants to provide a comparative analysis from which information could be collected about experiences, ways of thinking, creative production. The questions formulated from the exhibition curation underpinned the survey themes. To date, the analysis of the case study 'thinking to production' had been achieved through word clouds and a series of talking heads, which captured the discourse for final write-up and interpretation. Analysis of the case study transcriptions flagged up the main themes and reconfirmed what had been repeatedly evidenced, which was a multi-dimensional approach to production for the D artists. At this point in the investigation the research focus was formulated (see p. 10).

As discussed earlier in this research, the exhibition questions were drawn from the analysis of final case study interviews (see p. 123). Therefore a series of themes came out of the in-depth case study interviews running through all the discourses. This was also evidenced within the first exhibition; the intense exploration of the human condition and a sense of isolation and otherworldliness that manifested itself as spatial time-lapse images. In the case of the installation artist's work, this was made tangible by use of film and photography to recall artifacts that became memories. All the artists were keenly aware that they needed to capture their production to 'hold a moment'; to make tacit knowledge explicit. Film and photography were used extensively because recall was important to the review and making of the work.

There was a real energy around the need to hold onto the evidence for that moment as it made it all 'tangible' in fast flowed thinking. These themes provided formative evidence of the dyslexic approach to visual production. As I was one of the dyslexic case study participants and collaborated in the exhibitions, the research has a phenomenological perspective. However it is important that my experience, as part of the research, did not give bias to further research or subsequent findings. To ensure that this was avoided a range of tools was used for the analysis of the qualitative and statistical data. I found that a predominantly visual method assisted me in my analysis.

6.3 Approach to data collection

Data collection was conducted through visual, oral, aural and text-based means: orally and aurally through the use of assistive Dragon speech to text technology. Text-based data was sourced through bullet point notes listed under each questionnaire section (see Appendix G, p. 314). For each section information has been compiled from across all age groups with a comparability study of approach to production drawn from the ND and D groups. Visual data was collected through word clouds and was particularly useful in giving an overview of emergent themes; this was done by screen grabbing from the template of key words (see Appendix F, p. 311).

The visual word clouds are in Appendix P (see p. 333) of this research and were vital to the researcher's own thinking and analysis of the overlapping themes across the groups to grasp the meaning of the emergent themes. The emphasis of key words showed the weighting of attitude, views and values of a group to the questions posed within each section. Following the word cloud data, sections two, three and four were summarised as a series of bullet points (see Appendix G, p. 314). This data fed into the analysis of sections two, three and four of this chapter.

Survey sections were as follows:

- Section 1 Educational experience
- Section 2 Ways of interpreting ideas
- Section 3 Your strategies for thinking
- Section 4 Your views on creativity
- Section 5 Your approach to creative production.

Sections one and five of the survey were compiled as set statistics to test the validity and reliability of a wide range of data, thus checking the authenticity of the research focus; dyslexic or non-dyslexic, gender, educational levels, location, area of practice, thinking approach to production (see Appendix H, p. 316).

Section five is statistical and investigates 'approach to creative production' and has also been written as an overall summary across gender and age and as a comparative analysis between the ND and D artists. The approach to production is a key element of the research.

Sections two, three and four, 'ways of interpreting ideas', 'your strategies for thinking', 'your views on creativity', were interpretative in analysis with a template of key words drawn from these sections of the survey (see Appendix F, p. 311). Therefore a range of data collection for analysis, that is both statistical and qualitative, has been set in place. This is to ensure rigour within the research findings. At stage two there was overlap of narratives on visual practice across the groups. The statistical sections started to show differences as discussed further in Chapter 8: Comparative analysis of findings (see p. 217).

6.3.1 Data collection of section one

The introductory section one, 'educational experience', covered: domicile (post code), gender, educational background and whether assessed for dyslexia. Section five, covered the approach to creative production. Both sections produced data that gave a context to participant profile and thinking approaches.

From a return of 40 questionnaires 30% were D and 70% were ND. Location-wise the respondents were drawn from London, the South East, the South West and Scotland. The groups were divided into male, female, age groups and D and ND groups. The purpose was to find out if there was any variation of approach to production across these groups.

The findings in Chapter 8 show that there were differences in the way the groups sourced ideas, engaged with cultural capital and their inner and outer environments. Across the D and ND groups, the statistics were similar for gender, age and location. For example 75% of the D group were female and 79% of the ND group were female. Statistics were similar for education, for example 75% of the D and ND groups had obtained a degree. The interesting contrast was around range of media and approach to the work. 82% of D artists tended to be lateral thinkers compared to 54% of the ND artists. 70% of the D artists worked across media compared to 18% of ND artists. 46% of ND artists worked in 2D as a main area of work.

6.3.2 Data collection of sections two, three and four

The data is provided in different visual forms as an integrated and meaningful approach to extrapolate the emergent themes of the research. The questionnaire was designed to gain feedback from groups of age defined D or ND female and male artists. The data collected investigated any changes of attitude, thinking, practice or values. There were eight groups of male and female D and ND artists with an age grouping of 18+ and 25+.

Section two

Dyslexic artists: Ways of interpreting ideas

The male D artists, 18+, had a tendency to use technology. They used mobile device technology with a large amount of visual and sound stimuli sourced from the Internet, films and YouTube. This group explored conceptual thinking through visual stimuli using technology and in particular mobile devices. The group gathered and remembered through technology. This medium allowed for surreal moments and the experience of expanding thinking and ideas.

In general the group would talk in a holistic way that was intrinsically and emotionally linked to their surroundings (see p. 291).

The data for the D males over 25+ showed that this group worked far less with technology. This was an older group who understood technology well however unlike the younger groups they did not utilise the range of mobile technology. Instead they were much more contemplative and would seek their own personal space for clarity of thought. Unlike the younger male group, who thrived on mobile technology and the connections to be made, this group would contemplate visual associations within their own solitary space.

In particular, the data that showed that all of the older male dyslexics had an intense relationship with the written word, whether visual or verbal. All three of the D males went on to be interviewed because of this finding. Each artist had developed a unique relationship with the written word. This relationship had challenged their ways of understanding text.

For the younger group new technology was important for their practice. The older group prioritised space, clarity, harnessing the energy in their own space with the tools to enable interpretation of ideas. The written word had a very special relationship based on prior life experience.

The D female group of 18 + years was the largest group. Out of all the D groups this group made the most use of social media and digital technology in everything they did. It was how they interpreted ideas, expressed themselves, communicated, sourced information, socialised and was intrinsic to their creative production. They talked about 'cultural capital' as being a range of cultural experiences, knowledge and ability. This group was highly practical and organised. They gathered information in a systematic way with a range of strategies and tools for reading and recall. There was less discussion about visual means of working, thinking or ideas, much more about tools for gathering information and ideas. It is interesting to note that in comparison, the D female group of 25+, discussed visual means of sourcing information for

ideas as a way of visual exploration, through a wide range of tools such as books, exhibitions, photography, diagrams, sketchbooks and digital technology. Most interesting was emphasis on the physicality of creativity. This had strong links with the older male D group. Both groups had a strong emotional connection with their environments. Meaningful links happened with direct stimulus from the environment. Even for the younger male D group there was an emphasis on links with their environment through technology.

For all three D groups, younger and older male group and the older female group, visual creativity was linked to physical and emotional contexts. There was a holistic approach to interpreting and thinking about ideas and creative practice. The young female D group tended to place more emphasis on organisation and social networking.

Section three

Dyslexic artists: strategies for thinking.

When talking about strategies for thinking, the younger group of D male artists talked about a sense of aloneness in their work. They felt it was important to be alone in order to capture inspiration and to have those 'spark moments'. Earlier on in the research, spark moments had been talked about by one of the case study artists. The musician and visual artist had talked about the need to capture 'spark moments' when listening and creating sound and image. They worked and thought on an individual basis to meet all challenges. They certainly were not part of mainstream thinking and considered that it was important to have 'disobedience towards the basic rules of thinking'. Technology, individualism, embracing different ways of thinking was integral to the creative process.

The older male D group also considered being solitary useful to creativity. However with life experience they had also become cautious in that they were concerned that their dyslexia and the unconscious process of thought would be unprotected by boundaries.

By becoming immersed in their own thoughts and the expansion of their own thoughts they felt they could lose any awareness of boundaries. While this was important to spontaneity and brought a childlike quality to viewing the world, they were concerned that they should be careful and that assumptions could not be made 'The world could change in a flash, it could be unsafe'.

The immediacy of not analysing too much was considered part of the intuitive nature of thought. It was the motion of the action of doing that reinforced their experiences. This group had learned to be careful, not to assume, and to protect who they were within the world. Interestingly for one artist this caution had led to, at times, over-analysis trying to make sense of what was happening around him. Yet it was the direct connection to internal and external environments that mattered. They tended to rate the intuitive and pragmatic with wisdom about life, 'to have a hunger for the real world'.

The young female D group wanted to know about anything and everything. They had embraced the mainstream to gain as much experience, insight or greater knowledge. In order to capture experience, information, process and strategies were part of their system of thinking. Most of this group talked about strategies for cataloguing recollection. They talked about a visual method of recollection. Out of all the D groups, this group in particular would use writing to gather information. Writing was cathartic; it worked out problems and ideas and it enabled links between ideas once on paper. For this group being part of the mainstream was essential to existence. They had to be part of processes in day-to-day life. The search for sources linked to the written word played an essential part to how they operated. They wrote 'endless lists'. They used reflective journals and notebooks, yet they also talked about visual calendars and other visual stimuli.

Like the older group of male D artists, the older group, of female D artists, were reflective, influenced by past experience. They weren't concerned with caution but they did spend time looking at the past and how it linked to the future and present.

They embraced mistakes and had a pragmatic approach to living, life, thinking and production. This group was the first group to talk about 'trust in oneself'.

Section four

Dyslexic artists; views on creativity

This was the first time several of the groups talked about 'truth and trust'. Up to this point it had been the older D female group who talked about trust when in conversation about strategies for thinking. This had been about truth to oneself and how the artist functioned in life, in the environment and with others. The groups became more passionate and people truly revealed themselves when in discussion about creativity. This was about the essence of 'who' they were, why they 'existed', what they hoped to do and how they had evolved. When the analysis happened for the statistical part of the in-depth interviews, the weighting of emphasis on the statements made by the dyslexic group artists was much higher than the ND artists for all discussion points but in particular around creativity.

The younger male D group now started to talk about 'creative truth', to be brave and to risk failure. This had been something that the older female group had talked about in 'strategies for thinking'. Interestingly this younger male group also started to talk about thriving on experience and being near emotion. Again this had been an area of discussion with both the older D groups, male and female. Throughout the dialogue they had talked about their life experiences and emotional responses. This younger male group did not talk about technology when they discussed their 'views on creativity'. This is when they talked about passion, their need to connect with life, experiencing emotion, having different perspectives on ways of thinking and their relationships with other human beings. When discussion was about creativity the artists engaged much more with whom they were, their feelings, their responses, their connections, their relationships and the environment. Some of the artists in the older male group talked about the paradox of life, the ability to accept thinking in a new way, to be open minded and playful in exploration.

This group would talk about looking at the world as a child. They talked about their childhood experiences, the extremes of emotion, the highs of happiness and hardships. Two of the artists talked about analogies of situations and bringing those analogies to their own creative practice. There was a rich example of analogy when one artist spoke about writing about a 'sad bipolar bear'. This artist has extremes of highs and lows and siphons off his emotions into projects through analogies and metaphors.

The younger female D group wrote the most in the survey. They did not seem to be concerned by text, reading or indeed writing. They embraced any issues and threw themselves into what was required of them within mainstream life. As a group they viewed creativity as a combination of abilities: the ability to process miniscule detail, to have different views, having a curiosity and to reveal the overlooked. This group talked more than any other group about imagination and was the only group to talk about aesthetics. This group of all the groups was the most outward looking. They were highly flexible in how they engaged with society, themselves and work. They wanted to know everything and analyse everything. There was a constant critical analysis going on of how they acquired their own ideas and gained inspiration. In general there was a pragmatic approach to creativity, which was intrinsically linked with day-to-day living through metaphors and symbolic meaning. This group viewed creativity in a highly flexible way. There was much talk of relationships placing greater emphasis on relationships with others.

Finally the older female D group tended to be immersed in gaining inspiration from their environments they considered it essential to creative energy. Creativity was part of discussion and reflection part of action. This was an active process of creativity in which they considered they were part of the whole.

Section two

Non-dyslexic artists: ways of interpreting ideas

The group of ND males of 18+ was the smallest group: two people, however still of indicative value. They talked about interpreting ideas through the use of a range of tools. Books, reading, technology and writing were important to their research. They were analytical and talked about theoretical frameworks for practice, aesthetic qualities and strategic goals. They were research driven within a traditional text-based approach.

The ND males of 25+, was a much larger group with seven artists. They were similar to the younger male group in that they gathered information by a variety of methods. There was much more emphasis on text-based information and they were concerned with detail and sourcing detail. Facts were important. This group talked about sourcing information for inspiration whilst in production, and to inform their practice. There was an intense research approach similar to the younger ND male group. Meaningful reasons for their practice were important.

This group was varied in their approach to how links could happen; from having no idea to being very precise. The audience or viewer helped them make these links. In general their approach to work was detailed and had to be meaningful during the process of making. The making was all-important. The ND female group of 18+ years was very similar to the D group of the same age. Both groups were highly organised and used a great deal of technology. The technology included mobile devices such as iPods, the internet and various ways of communicating via the Internet. Again social media was important in sourcing information. This group, in particular, was deeply involved in organisation and structure in the way they interpreted their ideas. This was a constant day-to-day process of researching, filing, organising and interpreting information. However, they tended to be highly reflective to bring meaning to their creative practice, thereby bringing the theory and practice together. This was similar to the younger male ND group.

Day-to-day living brought recognised patterns, habits that would lead to themes. Words, phrases, text were important to the process of practical research-based exploration. They questioned with a consistently rigorous approach to creative practice.

The ND female group aged 25 + years had a sophisticated approach to interpreting ideas and gaining meaning in their work. They were the first ND group to talk about intuition, metaphors and analogies. As with other ND groups they were highly structured in the logical stages and steps in thinking to practice. Writing was a tool for structures to be set in place. Writing was a means to an end alongside other sources of gathering information (e.g TV and the internet) and for storing information in a meaningful way. This group talked about building and making that was intrinsically linked to emotion and feelings. Within this group there was an artist who had synaesthesia (see Glossary p. 295). She could smell colours, hear colours, letters would sing to her. This group was less about process and much more about meaning, motion and multiple levels of seeing and understanding.

Section three

Non-dyslexic artists: strategies for thinking

The male ND artists of 18+ used direct writing to capture thinking and so lessen any risks. Writing was a way of managing process whilst music was a way of managing feelings. Free writing was a way of getting thinking and ideas straight from the brain to paper. This small group of two had a tendency to talk about concerns over mistakes and wishing to get the thinking practice right at first. This was an interesting group in that ‘raw thinking’ was to be captured through writing or drawing.

The male ND group of 25+ years also talked about freeing up the mind to get a thinking process flowing. For some ND artists, work being done ‘in the head’ or through cognition was about making thinking explicit and tangible. The thinking manifested itself through discussion. Irrational thinking was not valid, unique thought was valid. Pleasurable experience was part of the thinking

process freeing up the mind to develop thoughts. Although thinking was about free-flowing processes, the production of work was about logical and scheduled processes. Solid research was valid to them.

New techniques and trying out ideas formed an important part of the thinking process for the group of ND female artists of 18+ years. Process factored high within their creative production. This was similar to the dyslexic group of that age. This group would talk about process above all; they had an intensely analytical process-driven thinking structure that, for them, contextualised meaning. Many different tools were used for this, but in the main, they were all routed towards a way of action planning or a timeline to link ideas together and then rearrange later thinking processes. One member of this group talked about 'mental drawers to categorise'. This was the crux of this group's thinking, in that they had to categorise in order to analyse often in a comparative way. They were deeply influenced by each other and peer comparison would form part of the thinking outcomes to measure success or failure. The use of writing, words, visual plans, pictures were part of the feeding into a timeline. It enabled a train of thought, to have opinions, to evaluate and weigh up ideas. There was a cycle of writing to drawing, then writing to capture thoughts, plan, and be logical.

Emotion and relationships were an important part of the thinking processes for the ND females of 25 + years. This older group would talk about a sense of loss and were the most expressive of emotion. Life experiences had taught them to be reflective and considered about their dialogue for making, thinking and creativity. They were aware of complex approaches and used a range of media to analyse and express themselves. This was a methodical practical approach, which was linked to the action of doing. Trust in oneself, trust in others, trust in the material, trust in creativity, all were about the need to feel grounded and have tangible outcomes.

Section four

Non-dyslexic artists: views of creativity

The ND male artists of 18+ years, talked about inherent talent. Part of that inherent talent was the ability to draw. This, to them, was the highest creative level. There was much talk about observation as part of production. Time factored into the process of thinking: the transience of production, the audience response, moments of the 'here and now' were about 'experiencing and making'.

The ND males of 25+years talked about a process of ideas, the process being the ability to see in a creative way. Again there was talk about inherent talent; to be able to visualise was a talent. This was about experience and exposure to practice. Interestingly time was factored into this discussion; the time to develop, research and improve. The intellectual process was discussed linked to logical stages and to the need to test theory to practice. Although an academic group of people, there was some mention of a dislocated feeling towards reality, which manifested itself in dreaming. This was an articulate group who talked in metaphors to contain meanings and analogies to convey ideas. This group was thoughtful and talked about inspiration that came in flashes or spark moments; production was considered carefully for making and meaning. There was a sense of needing to live life, to try to capture reality in experience and to record experiences.

The ND female group of 18 + years were similar to their dyslexic counterparts in that they enjoyed social opportunities to share feelings, social media and social networking. There was a need to have experiential learning by bringing people together. As a collective they would take risks, make mistakes, self-discover and create. Technology was used to view multiple perspectives. They used a wide range of tools for their creative practice. To acquire ideas they would make mental lists, use the Internet, read, use text words for ideas and brainstorming. They questioned, watched, listened and considered. These groups read a great deal and used writing to express their thoughts. They were constantly active as physical activity was important to their creativity.

The ND females of 25+ years would discuss life experiences as part of their creative output. Multiple meanings would include a range of perspectives, boundaries and expansive associations. To be able to set something up and dismantle it was 'the process of setting up and breaking down'. For some of them, dreams and travelling between the unreal and the real-time, space and movement were produced within installations, performances and video. Pushing boundaries across a multi-dimensional terrain was the approach.

6.3.3 Statistical data of section five: summary on production

Drawn from the qualitative investigation of thinking, the research summarises the approach to production by all groups. The approach to production was investigated through qualitative and statistical methods.

The survey questions for the final section 5; 'Approach to production' were:

- 1) Does your creative practice involve working on several parts of your work at one time?
- 2) How do you review and improve on your practice experience?
- 3) What is your preferred way of acquiring information and influences?

The first question of this section (section five) informed the statistical analysis and benchmarks the reliability of the research data. Across all the ND (non dyslexic) groups there were 54% artists who could work on several parts of the work at one time as a way of constantly informing ideas, giving a better sense of continuity:

'Working involves several parts at one time particularly in terms of planning and keeping one step ahead whilst overlooking the whole'.

Many artists worked in this way so that changes could be made quickly and to inform thinking. One painter said she worked in this way otherwise she would be in danger of becoming 'unbalanced'.

Inspiration was about moving back and forth, mapping reference points, stepping away, then moving on. This approach allowed for thinking across work whilst gathering sources for another area:

‘The work will start to evolve but may sit quietly in the background for a while, simmering while I work on other projects’.

The ability to make novel connections between different things and relocate in a novel context was valued, as were interrogating peripheral ideas to find a fresh and meaningful perspective. Another artist pondered whether others ever saw a rationale in the way he approached his work. He would try to follow a linear path from concept to completion but would often be diverted laterally:

‘I do not regret these distractions as I work to my own timetable and nobody dictates how or what I should be doing. I only regret that some pieces take so long to produce.’

46% of ND artists would focus on one part at a time: ‘I work better if I am methodical and start and finish at a time’. This was a process that was in definite stages: doing one thing at a time; working in chronological order from stage to stage in a methodical way. The process of the production would dictate the way of working: ‘everything is done step by step, I must complete one stage before moving on to the next’. The end product was viewed as a process:

‘I am a methodical worker and will tackle practice systematically. My way of working is to start at the beginning, complete that phase then move on to the next part.’

It was interesting that the ND artists whose thinking to production tended to be more linear were not so emotionally connected to their work. It was seen as a process to be logically thought through. 18% of ND artists would work to a set order. ‘No I am quite linear and cannot multi-task easily. ‘I have to do one

thing at a time'. There were marginally more ND artists who would work on several parts of their work at one time. These artists would engage much more in a descriptive narrative of how they felt about the work.

There were substantially more D (dyslexic) artists who would work on several parts at one time. This was 82% of D artists. To many it gave a better sense of continuity. It was seen as an embedded approach to work and provided inspiration and ideas. For some, working on different aspects at the same time meant they would tend at times to get involved in one aspect more than another. There was an element of obsession when work was seen as interesting:

'All the different elements and interests of my practice interlink and so I am usually cross-referencing across them and taking ideas from different areas for others.'

The making of things into parts then putting them together was seen as an integral way of working. Several D artists would say that they could move around different media taking ideas from source to source. If several ideas came to mind it was necessary to get on with them while they still existed.

'I am happy to drift for making in the physical sense to writing and poetry.'

For many D artists the need to keep the work fresh meant that they would work on several elements at one time. They needed lots of 'doing while I am thinking for a fresh frame of mind'. The second and third questions were posed to reflect on practice and to revisit Section two of the survey 'Ways of interpreting ideas', where the question was posed: 'How do you gather information to develop your ideas?' The purpose was to find out if, during the process of being surveyed, the artist had identified a preferred way of sourcing information for practice ideas.

6.4 Summary

There were changes in response during the process of the survey concerning questions 2 and 3 of section five. The last question for section five of the online survey is: What is your preferred way of acquiring information and influences? This question revisited the question posed in section two: How do you gather information to develop your ideas?

Dyslexic group: changes in response

For the D groups, the qualitative data showed that the review process included the use of breaks in work to come back with fresh eyes. Verbal feedback from friends, audiences and other artists was valued highly as was talking with people, remembering mistakes, constantly going over old sketchbooks. By the end of the survey there was more emphasis on discussion and visual recall. Learning from mistakes was seen as wisdom. Personal experiences were influential. Interestingly there was an increased emphasis on sources drawn from the written form, eg. short texts, copying sentences or reading in short stints. The D groups still recognised a wide range of sources from technology, internet, life, social media, drawing, history, the environment, paper sources and visual images everywhere.

Non-dyslexic groups: changes in response

The qualitative data across the ND groups showed the reviewing process to include recognition of mistake-making and risk-taking. Thinking was reviewed to improve practice and through this process new ideas were to be pushed forward and challenged. The audience response to work enabled self-critical analysis. This approach allowed for thinking across work while gathering sources for another area of work. There was substantial emphasis on recording through writing, note-taking, use of lists, diagram, mind-maps and use of sketchbooks.

By the end of the survey there was more emphasis on relationships with themselves, others and the environment; life experience was factored more highly. Use of the Internet and social media was recognised as of greater

value. There were substantially more dyslexic artists who would work on several parts at one time. Several artists would say that they could move around different media taking ideas from source to source. If several ideas came to mind it was necessary to get on with them while they still existed. The process of the work seemed to be about controlling the ideas.

In conclusion the survey showed that 82% of D artists tended to be lateral thinkers compared to 54% of the ND artists. 70% of the D artists worked across media compared to 18% of ND artists. 46% of ND artists worked in two dimensions with this being the main area of work (see p. 147). The case study work demonstrated the D artists' ability to think in a multi-dimensional way. The survey, through the collection of data, further showed that D artists tended to be lateral thinkers working in an exploratory way conducive to their multi-dimensional way of thinking. All the artists used similar terminology to describe production and this was part of their thinking to production, thus there was substantial overlap in use of language across the groups. However, through this statistical element of the data collection the research further found out that D artists have a greater propensity to think in a range of dimensions.

Chapter 7: Fieldwork stage three; the semi-structured interviews

7.1 Introduction to the mixed method data collection

The third stage of the research examined in depth the data drawn from the fieldwork with 10 semi-structured interviews of 5 ND artists and 5 D artists drawn from stage two. Contact was made with the artists involved with the survey to further develop the discourse. The survey received 40 responses comprised of 28 ND responses and 12 D responses. To start the discourse a Likert scale (Likert, 1932) was introduced to the survey questionnaire. The Likert scale provided a tool for statistical analysis as a benchmark for the qualitative investigation and contributed to the data drawn from the analysis of Section 1 of the survey and the first question from Section 5 of the survey. This tool enabled a more linear comparative analysis of qualitative interviews, to provide rigour to the validity and reliability of the investigation.

Approach to the reliability of coding

The Likert scale provided an attitudinal weighting of significance to the questionnaire feedback given by each of the 10 artists. The scale was introduced to the questionnaires produced by each artist and was used to scale their views on each questionnaire section (see Appendix E, p. 304). The scale assumes that the intensity of experience is linear, on a continuum from 'strongly agree' to 'strongly disagree', and makes the assumption that attitudes can be measured. Respondents were offered a choice of five pre-coded responses (Simply Psychology, 2013).

Each statement point was identified in a clear bullet point as a standalone statement. These statements were drawn from the responses to each survey question and compiled in negotiation with the artists.

The questionnaire, with the Likert scale, was introduced to each statement and then given back to each artist (see Appendix F, p. 311). The artists were asked whether they still agreed with the identified statements. On agreement each artist then scaled each statement to express how much they agreed or disagreed with a particular statement. The scale offered a choice of five pre-coded responses: Always (scale 5, Always in attitudinal emphasis for the value and significance), Mostly (scale 4, Mostly in attitudinal emphasis for the value and significance), Quite Often (3, Quite Often in attitudinal emphasis), Sometimes (2 Sometimes in attitudinal emphasis) Least (1, Least in attitudinal emphasis). By doing this analysis through a Likert scale, the research gathered linear evidence through frequency scales by giving a fixed-choice response via measuring levels of agreement or disagreement (Bowling, Burns and Grove, 1997). Thus measuring the cognitive attitude to statements made in the survey to then expand on the response in the interviews.

Approach to qualitative coding

The semi-structured interviews investigated the emphasis of response evidenced from the prior survey. So as to move discussion to areas of importance for the artists' approaches to production the semi-structured interview questioning was guided by the survey section questions and facilitated by the interviewee. Each interview was recorded and transcribed (see Appendix L, p. 328). The coding of the pattern of survey themes informed the interviews and assisted in evidencing links and patterns across each stage of the research process (see Appendices F and G, pp. 311- 314). The qualitative analysis of the interviews identified themes drawn from the semi-structured interviews. To conduct this analysis a template of coding was devised to map the themes from the earlier survey (see Appendix J, ,p. 319). The themes were identified through a listing of the questions that evolved during the interview discourses (Appendix I, p.317). The following narrative is drawn from these interview transcriptions, which were then coded according to the emphasis placed on areas of discussion. This coding provided the emergent themes for the data to be analysed (see Appendices N and O, pp. 331- 332).

7.2 The statistical data

This section discusses the data gathered by using a Likert scale introduced to the survey questionnaires prior to interview. The following is an overview of in-depth interviews with 5 D artists and 3 ND artists. There were a further 2 ND interviews, one by Skype and one face-to-face. These participants did not fill in the Likert scale due to their time constraints. The introductory Section 1 had covered variables such as: domicile (postcode), gender, educational background and whether they had been assessed for dyslexia. Appendix H (see p. 316) shows the statistics drawn from Section 1 for the 40 surveyed artists. The Likert scale was introduced for Sections 2, 3, 4 and 5 of the questionnaire. The response to the questions from these sections were gathered as a set of data drawn from percentage ratings measuring the weighting of attitudinal emphasis placed on each statement. Appendix E (see p. 304) shows how the artists identified the importance of each statement. Therefore the frequency scale allowed for a fixed-choice response measuring levels of agreement or disagreement. This measured the cognitive attitude on how true each statement made in the survey was. This was then fed into the semi-structured interview. The original survey questions asked How, What and Why? To build on their survey responses, the artists were now asked to scale the value or significance of their responses. For example Section 2. Q1 Ways of interpreting ideas.

How do you gather information to develop your ideas?				
To note the red denotes the scale chosen for the significance of value by the artist.				
1) Any and every where (sic) stealing ideas from history the news, living and dead artists, film, radio the internet students,				
2) I am a scavenger and nothing is too trivial or too important to be a potential source for inspiration ,				
Always	Mostly	Quite Often	Sometimes	Least
5	4	3	2	1
5	4	3	2	1

Section from Appendix E (p.304)

In this instance five D artists i.e 23% of the sample ticked the 'always' box indicating that particular ways of gathering information develop to their ideas were always of value. The purpose of scaled responses reflected the numbers of times the artists agreed a significance of value for the statement made. These statements and the scale percentage of attitude are outlined in Key 9 (see pp. 242-246) to show the intensity and type of responses. The qualitative questions 'How?' 'What?' and 'Why?' in the survey are signposted to the statistical scaled responses of attitudinal value.

Original survey questions for Section 2: Ways of interpreting ideas.

- 1) How do you gather information to develop your ideas?
- 2) How do you remember your ideas?
- 3) How do your ideas gain meaning?
- 4) How do you make links between ideas?

Key 1 Section 2: Dyslexic responses to ways of interpreting ideas. The table represents the attitudinal weighting of the value and significance of interpreting these ideas:

	Always	Mostly	Quite Often	Sometimes	Least
Q1	23%	16%	5%		
Q2	14%	2%	2%		
Q3	8%	14%	2%		
Q4	8%	6%			
Total	53%	38%	9%		

Section 2: Non-dyslexic responses

	Always	Mostly	Quite Often	Sometimes	Least
Q1	9%	6%	11%	6%	2%
Q2	6%	6%	9%	15%	
Q3	9%	6%	3%	3%	
Q4		6%		6%	
Total	24%	21%	23%	30%	2%

Summary: responses from the D artists were weighted towards a preference for Always. These artists considered it a significant part of their practice to investigate ways to interpret ideas with 53% responses as ‘always’ and 38% ‘mostly’. There were no ‘sometimes’ or ‘least’ responses. For the ND artists the weighting was ‘sometimes’ at 30%, followed by ‘always’ (24%) and ‘quite often’ (23%). The spread of weighting of preference was wider across the categories (see pp. 162-164).

Original questions for Section 3: Your strategies for thinking

- 1) What are the experiences that give you direction?
- 2) How do you capture your thinking?
- 3) How do you analyse your thinking?
- 4) How do you approach your thinking to production?

Key 2 Section 3: Dyslexic responses. The tables represent the attitudinal weighting of the value and significance of strategies for thinking:

	Always	Mostly	Quite Often	Sometimes	Least
Q1	17%	7%	2%		
Q2	13%	10%	10%	1%	
Q3	13%	9%	2%		
Q4	10%	4%	2%		
Total	53%	30%	16%	1%	

Section 3: Non-dyslexic responses

	Always	Mostly	Quite Often	Sometimes	Least
Q1	6%	13%	3%	4%	
Q2	10%	6%	13%	7%	
Q3	3%	3%	6%	4%	
Q4	16%	3%	3%		
Total	35%	25%	25%	15%	

Summary: The ND pattern of responses was more spread out across the categories. For the significance and value of strategies for thinking, the main responses were for 'always' however 'mostly' and 'quite often' had equal weighting and accounted for the highest percentage of the responses with a combined 50%. The D responses are grouped in 'always and mostly' with 'always' being 53% of the total.

Original questions for Section 4: Your views on creativity

- 1) What do you think are the skills and talents attributed to creativity?
- 2) What is the nature of your own creative practice?
- 3) Can you give an example of your own way of creative thinking?
- 4) By what means do you acquire inspiration for your ideas?

Key 3. Section 4: Dyslexic responses. The tables represent the attitudinal weighting of the value and significance of views on creativity:

	Always	Mostly	Quite Often	Sometimes	Least
Q1	23%	6%	6%		
Q2	11%	9%	3%		
Q3	15%	2%			
Q4	17%	4%	4%		
Total	66%	21%	13%		

Section 4: Non-dyslexic responses

	Always	Mostly	Quite Often	Sometimes	Least
Q1	11%	13%	2%		
Q2	4%	13%	6%	3%	
Q3		4%	6%	3%	
Q4	19%	6%	6%	4%	
Total	34%	36%	20%	10%	

Summary: On the value and significance of creativity, the D responses were highest in the 'always' category. This was particularly high at 66% of responses. This section, 'Views on Creativity' produced the strongest responses. The D group did not include 'sometimes'. The ND artists again had a wider and more even spread of responses with the highest being 'Mostly' at 36% closely followed by 'Always' at 34%. 'Sometimes' was 10% (see pp. 162-164).

Original questions for Section 5: Your approach to creative production

- 1) Does your creative production involve working on several parts of your work at one time?

The first question of this section (Section 5) informed the statistical analysis as a key element of the research and includes all the 40 artists in the prior survey. Below are the responses from the 40 artists surveyed. The percentages are calculated within each grouping. 82% of D artists worked in a lateral way. For the questions 2 and 3 this was part of the data produced through the Likert scale.

Key 4 Section 5: Statistical data drawn from the question: Does your creative production involve working on several parts of your work at one time?

Q1	Dyslexic		Non Dyslexic	
Statistical analysis 40 artists in survey	M	F	M	F
Working on several parts at one time (Lateral)	32%	50% = 82%	11%	43% = 54%
Working on one part at one time (Linear)	9%	9% = 18%	14%	32% = 46%

Section 5: Dyslexic attitudinal responses drawn from questions 2) How do you review and improve on your practice experience? and 3) What is your preferred way of acquiring information and influences?

	Always	Mostly	Quite Often	Sometimes	Least
Q2	9%	18%	8%	13%	
Q3	31%	13%	8%		
Total	40%	31%	16%	13%	

Section 5: Non-dyslexic attitudinal responses drawn from questions 2 and 3:

	Always	Mostly	Quite Often	Sometimes	Least
Q2	13%	13%	13%	8%	
Q3		33%	20%		
Total	13%	46%	33%	8%	

Summing up

The value of reviewing practice in creative production (Q2) was spread evenly across the scale for the ND artists whereas the D artists 'Mostly' found this of significance to their practice experience. For the value of acquiring information and influences (Q3), 31% of D artists 'Always' considered this significant to their approach to creative production, while 33% of the ND artists 'Mostly' considered this of significance.

Section 5, question 3: What is your preferred way of acquiring information and influences? This question revisited the question1 posed in Section 2: How do you gather information to develop your ideas?

Key 5.1) Dyslexic responses

Section 2 How do you gather information to develop your ideas?

	Always	Mostly	Quite Often	Sometimes	Least
Q1	23%	16%	5%		

Section 5 What is your preferred way of acquiring information and influences?

Q3	31%	13%	8%		
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1) Non-Dyslexic responses

Section 2 How do you gather information to develop your ideas?

	Always	Mostly	Quite Often	Sometimes	Least
Q1	9%	6%	11%	6%	2%

Section 5 What is your preferred way of acquiring information and influences?

Q3		33%	20%		
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The above shows that through the process of the online survey and then the in-depth interviews; it was the ND artists who had re-evaluated the preferred influences and information on ideas, therefore the change in scoring at the

end of the interview for this area of questioning. Towards the end of the interview the non-dyslexic answers were weighted more towards 'mostly' and 'quite often' on the importance of sources to gather information, there were no responses for 'always' whereas for Section 2 this had been the highest scoring. Throughout the interviews it was noticeable that this group of ND artists reviewed and questioned their thinking to practice much more frequently. In contrast the D artist responses were very similar at the start and end of the interview for both questions posed.

Key 10 charts the scaled responses and the intersection point illustrating the convergence of views and responses of both groups (see pp. 247-249). The point of intersection for the D and ND artists was between 1 and 3 on the scale. This showed the convergence of attitudinal values at the lower end of the scale at 'quite often', 'sometimes' or 'least' so demonstrating the differences in thinking approaches. The D artists put emphasis on their ways of thinking to production with the consistent measurement of 'always'.

The final question in Section 5 of the survey posed the question: 'What is your preferred way of acquiring information and influences?' This question revisited the question in the earlier Section 2 of the survey 'How do you gather information to develop your ideas?' Interestingly the ND responses had changed substantially between Section 2 question 1 and Section 5 question 3. The two high percentage scales were 33% for 'mostly' and 20% for 'quite often' (Section 5, Q. 3) i.e. no longer did they consider that they knew how they 'always' acquired information. They did not have any responses for 'always', 'sometimes' or 'least', whereas for Section 2 (Q1) they had responded for all the categories. As though the survey had made them reconsider this 'information gathering process' in their thinking for ideas. The scaled responses from the survey revealed that visualisation tended have a different conceptual meaning for each grouping of ND and D artists with D artists weighting their responses towards 'always'. Prior to this the survey had shown that 82% of D artists would think in a multi-faceted way, while 54% of ND worked in a more sequential and linear way. 70% of the D artists worked

across media compared to 18% of ND artists, with 46% of ND artists working in 2D as their main area of work. To establish if this was the case, the researcher asked a final question ‘When you walk away from this interview how will you remember it?’ This question was posed to three interviewees in each group (D and ND). It was noticeable that some of the non-dyslexics had not been conscious of a visual way of recall and thinking.

7.3 The qualitative data

The following data is a narrative of the 5 D artists and 5 ND artist’s responses within a semi-structure interview setting. The data is drawn from the transcriptions of the interviews that were then coded according to the attitudinal emphasis placed on areas of discussion. This coding provided the emergent themes to be analysed (see Appendix O, p. 332). The narrative is illustrated by examples of the artists’ discourses.

7.3.1 The dyslexic artists

Section two: Ways of interpreting ideas

For some D artists, there was a sense of dreaming; at times they needed to ask themselves; ‘Am I awake?’ Particularly at the time of waking up this was when ideas would pop up in the mind. This was called ‘waking up to a theme’. Dreams could be vivid and there was a cross over from wakefulness to sleep; where one artist described her ideas and memories while sleeping. Dreams were where the ‘mind’s eye’ could range around searching as a rich source for ideas that captured images and enabled problem solving; at times real and unreal time blurred together. Several D artists talked about the capacity for movement in their dreams. ‘Time is relative. There is no past or future, time happens now’. Dreams are to be returned to and reawakened. Images revisited to search for ideas and concepts. Colour, shape, movement, space and sound are part of the experience of dreams and a rich source for ideas:

‘I can recreate what is in my dreams, I can move, fly, swim around it. See all different shapes.’

The D artists talked about dreams as a means for capturing ideas, but also as a narrative for wishes; when talking about a form of collaboration as a way of having a mixture of dreams with other artists. In these discussions, there is a sense that the tangible and the non-tangible integrate in a dreamlike way that is linked to the state of being dyslexic. There is a detachment from perceiving the world. The interesting element is the apparent ability to manage one's own dreaming, to be able to return to the same point in previous dreams. For several D artists a piece had to be finished and to be experienced to be tangible:

*'When I actually produce it and I can see it. To print it out it becomes tangible'
'The outcome is not complete until I actually get it printed out'.*

It is as though an object, artifact, or piece of creative work had to be material and physically experienced to make it exist in reality. The important element was to make contact, 'to use all the senses one has'. This materiality was about an experience that is called 'tangible existence'. Yet for some D artists the idea provides experience, as their thinking is in fact 'tangible'. For example 'the wall' (see below). This is a vivid multi-faceted experience of creative thinking.

D1 and the influence of dreams

D1 talked about being able to recreate her dreams by moving around the images at later times in her 'mind's eye'. She could revisit and see in shapes and colour and movement. Often places in her dreams would be returned to at different times in her life. These dreams would be returned to many times. In this way she had created a wall; she described this as '*a whole wall*'. Each brick was an aspect for different things. It was a wall she wanted people to feel in the dark. It was to be used to mix different words from other languages.

'I would love to have a 6ft wall for people to use in the dark'

Trust

The artists discussed the need to have tangible experiences linked to trust as a core part of production of practice; to 'trust oneself' and most importantly, to then trust others. These others were other dyslexics. This linked to working collaboratively in the form of feedback and actual working practice. Tangible experience is integral to trusting the experience of the working practice, experience of life and the experience of the reality of creative practice. From this discussion it became apparent that some of the D artists thought in groups of others, firstly D fellow artists then ND people.

'Some people make me feel very nervous and tense, I would not work with someone I did not feel comfortable with'.

D2 and approach to thinking

'It's a bit like being a blind person. You have got a vision and cannot quite see it and focus'. D2 talked about seeing things visually and 'making stuff'. He used metaphors that explored feelings of discomfort and comfort.

'A splinter can make you recognize that something has been there. There is a time for it to come out and sometimes it stays in. Time is part of this when the passage of time goes fallow'.

He then went on to expand on this idea. He talked about the drawing of a compass circle when there is still a 'sore point' so that where the needle goes in you get excited. 'You think where did I see that image?' He talked about wanting to make 'a nice pointy thing to go for stillness' making the object exciting, so that once started another idea will come along.

'Then you know how things will meet the end, the point is you know it is going to end and it is not exciting any more. It is trusting of the experience'.

D2 talked about intuitive trust. The ability to innately know something is right: 'it is about memory, about a place, a time, to trust that memory'. For the artist, it was the ability was to ground oneself in 'a place or way of seeing'. Words were talked about in a variety of forms. Words were not trusted; the symbols could mean anything and were not linked to anything that could be meaningful in life. These were totally abstract concepts that only later in life could be used and owned in a variety of ways that could be meaningful.

Words came to be almost obsessively investigated. D5 talked about how he interpreted words through 'versions'. He had calculated a series of year pieces linked to typefaces to symbolise every year he had lived. The years were versions of fonts; these versions were a language created to become owned. They symbolised multi-layered meanings. Words could become part of dreams as symbols; they could have many contexts.

Analogies/metaphors

For these artists, words had to become meaningful. The artists had a rich experience of problem solving in order to make meaning. They talked in metaphors and analogies to create a richness and depth of understanding about their environments. The older artists would talk much more in metaphors and analogies to explain feelings and creative ways of seeing. Symbolism was about a variety of meanings, and places were about feelings. Images were either visual metaphors or literal images.

Mapping

The interviews showed that, for the D artists, searching for sources of inspiration was through conceptual and tangible means; experiences through senses. Exploration was extremely important for all the artists as part of their freedom to enjoy interpreting ideas. D3 talked in detail about how he would search for concepts and ideas. This was a complex map of connections. He would start at a point then expand, 'If I get to a point that is too far away then I come back a couple of steps'.

The narrative described connections that are multi-layered within a spatial context. The browser of the computer had become the pencil as the point from which to map a journey. Here there was again a reference to points from which a connection or a creative journey is made. Another of the younger artists, D4, talked about training her brain to pick out visual images to remember. She interestingly referenced reading as an analogy; 'now that's a song, then a book, same as English studies I would remember a book rather than a painting'. She also used technology as a tool for research to save and store knowledge for later retrieval, saving websites for links to images. 'I want to get that image so it stays in my head'.

Multi-faceted

Most of the artists found the semi-structured interview questions at times surprising. They had such an innate sense of their own approach to creative production that they had not tended to unravel how their thinking had got to a creative place. This they acknowledged was inherent, intuitive knowledge. D5 talked about the paradox of versions; a finished piece was a paradox, not necessarily complete, as there were other versions produced, these versions explaining meaning when resolved. D3 talked about grabbing stuff physically, looking for objects that are hidden. This hunting was how it felt to inhabit the real world; always looking:

'You get a vision and cannot quite see it and need to focus.'

They would talk in terms of: shape, colour, being able move around the objects, seeing images that work with a range of senses, ideas that spin off from each other, that pop in and out of the head as spiral movement:

'Things pop into my mind; feeling as if started in a past book.'

Section three: Strategies for thinking - Dyslexics

To some D artists the audience was abstract. To others they were part of the process of production. The audience was talked of in terms of an abstract;

why would an audience be interested? Why should an artist force ideas and concepts? This view was entirely different to the ND artists; for them the artist could have a creative relationship with the audience as part of the artwork. One other D artist also had this view about collaborative working with the audience:

'The audience as the reader over your shoulder is too inhibiting - one is inclined to talk down to them and not expect them to be as intelligent as you are - always insulting - I hate that when people do that to me'.

The collaboration with other artists made the work tangible. Interestingly many artists would talk about writing to capture information and ideas, and to source analogies. For some, endless lists meant ideas could be in one place. One artist said they always worked in text for ideas:

'I never draw images because it takes too long; I would rather write and get ideas down'.

Collaborative working with other D artists was particularly valued and made thinking tangible. Gaps would be filled in without discussion, enabling ideas to bounce almost effortlessly:

'No definite sentences - all jumping over like a performed dance just interpreting and getting off on each other - it made sense. We got work done so quickly. If you had to speak all the time I will be tired. The purpose was to do something.'

This had manifested in the second exhibition for this research where both artists met once to set down the concepts to be shared. Then it was the fluidity of production that was of most importance to both D artists. The outcomes of the exhibition were the production and the feedback from the audience, making the process of production tangible.

Intuition

Although all of the artists agreed that they thought intuitively, some of them were highly analytical, giving a great deal of emphasis to logic. It was as though this validated thinking processes and evidence for production.

D3 and approach to connections

D3 would store information in a logical area rather than in a creative area. He concentrated on memory techniques taught by Dylan Brown, making lists of up to 50 things to be stored in this way.

He talked about his thinking which goes into many directions, some ideas being 'gems'. He tried hard to keep everything in a physical way. He would try to keep imagery for as long as possible, to put it somewhere where he could retrieve it. But it would be very temporary, for only up to 3 days. This concentration on remembering detail filled his mind with the need to store information. He had even tattooed bullet points on his hand. So every day he would write an important list of things to remember on his hand. He would look at his hand to know what he had to do that day. This was a logical reminder that he needed to structure his day: 'not the amount of bullet points more the concept'. He would always have this list of no more than 8 things. This was his logical approach. If he wanted to capture more creative thinking, a 'spark moment', he would use his iPod as all his creative writing would go there. Logical lists on his hand and temporary creative thinking could be referenced on his iPod. He explained to me the associations he would make for connections:

'You get two objects together, you make a usual thing, you get like a mug and a plant then you make a really usual connection like to a mug with a ridiculously massive plant in it, then the next thing is milk then you mix the milk with the plant to make a disgusting drink. This connection I logically store like that.'

This artist was making multiple lists to make it real, to try to capture his thinking and acquire clarity. All the while his intuitive thinking was bubbling away behind these lists. He had said to himself that he would only choose three ideas; one would be the 'killer idea'.

He had processes in his brain, a system to make sense of his ideas and thought. His system was as a file to make the connections. Yet he knew that he was intuitive, his intuitive thinking would come up with the most innovative ideas. Still he had to have systems to place and file these ideas:

'I think it is a lack of confidence. I can see the connection but I don't think it's strong; I think my brain is different to other people.'

The artists would also allow themselves to make thinking journeys that ensured divergent thinking. The same artist, D3, who had tattoos on his hand, would talk about 'negative space'. This meant he had the ability to conceptually understand other ways of seeing imagery; conveying other meanings. In his mind, intuitive thinking underpinned by a structure of systems gave him a safety net. This was the 'thinking point' from which the artist had travelled and was recognised by several D artists as an important part of the intuitive thinking process to creative production.

Multi-dimensional thinking

The artists talked about visual connections, with shapes and colour merged together. Sometimes the influence would be historical, symbolic or about prior experiences. For the younger artists, connections were made through technology which enabled them to go back at least 5 tabs in the browser. Even though 'it gets messy in my head I usually go back to the place where I can find the original connections, I then take the last two things and keep them'. The following narrative describes reference points in thinking:

'You get further away, to the point, you are so far away that you are sometimes connected - you delete certain parts then you get closer. Then you realise the ideas are far away from each other. Then they are quite connected when you introduce another element. You got the ideas, the two expansions then that will make a solid triangle idea. Doing this you can get two things closer and closer so when they become further away from each other, from the thought, then they get closer to each other'.

Multi-dimensional thinking was enhanced when working with other D artists. The artists were asked about multi-dimensional ways of capturing thinking; how do you see it in your head? They all answered in different ways. D4 did not see beyond two dimensions, this was the youngest D artist who had given the shortest answers with many references to mainstream influences for her inspiration and ways of thinking. The other artists would have a multitude of ways to navigate thinking and images. These artists would experience movement, have the ability to move around images in their mind's eye as in flowed spatial movement. For example, one of the case study artists (Stage one) had constantly referred to 'my third eye':

'You just do it. It is almost counter to intellectual-analytical approach. It is something innate. I don't know, it just feels good - it feels right'.

Training

By breaking down information many of the D artists could then manage information flow. This training had come from some of the artists' own coping strategies and the staged structures that were set in place in mainstream education. The terminology of arts education was shared across both artist groups. The D artists had the ability to go off at a tangent more readily and to take risks in thinking around concepts. However to balance this out there was a tendency to balance intuitive thinking with rigorous, systematic working out. One such example was the visualisation of gradients. D3 could visualise percentage gradients; this would be done in his head.

This was a visually detailed process of breaking down the factors of a project, tracking down key components of colour (colour gradients) and concept, and also included factors such as the audience.

‘For example; a campaign is broken down into concepts and the audience. Making posters is quite important so I give it a grading system, which I can assess against. What are the top three factors and the bottom three factors? Then I go; do I put them together? Do I need them there? That is important as correlation works well. Then I merge them together’.

D3 then gave a hierarchy, through colour gradation, which he would then visualise. For the concept to be merged between different ideas, he would put in order what would be discarded and what elements of his visualisation would be kept. For example; he knew what happened each day from the visual association he engaged with. Sometimes this would be in writing and sometimes he would give a number to categorise factors:

‘It’s almost like as I have done with words - I know what each grey means, if not grey then I will try the next grade down.’

D3 would talk about other artists sharing their work with him. Sometimes they would ask ‘what works best’? The artist found this difficult, as he would look at each piece of work individually with separate ratings for a specific criteria; he would never go above 87 out of a 100, then he would decide on 3 ideas out of the individual ratings for his work. He graded ideas through colours and hues.

D4 talked about approaching research using text and technology; narrowing down ideas by a fast-paced brainstorming process. She talked about brainstorming embedded within art school training which trained the brain to be inspired and to analyse everything. However she considered that this was a natural process.

Thinking and Making

For most of these artists, thinking around creative practice was grounded in the action of doing. The action of making was part of the process of thinking. One artist (D2) said that making was about living your existence. It was about the influences, experience in life, enjoying developing ideas and producing creative work. For D2, a strategy for thinking to making was about investigation. To describe this process he talked in metaphors:

'The rift of a still point in time - the compass, I like to share it and show off and play with it myself.'

'But that bit when you have an idea in your head. It's a bit like being a blind person. You kind of know what it looks like - but if I knew exactly what it looked like - I could not do it. I would think Oh Christ I may as well do an ordinary job.'

He would talk in analogies;

'That toy was in the cupboard - I forgot about that. Why should God have all the fun of making stuff. I want to make things, make something not there happen in the world. A touch of hubris - most times it never turns out as great as you think.'

Several references were made to writing and words. The ability to cram writing in 'to get as much information' was valued, inasmuch as the actual making was a slower process (D4).

Technology enabled creative writing by way of expanding on visual metaphors and analogies. The artists often used writing to get information 'out of the head'. Analogies made ideas more meaningful; narratives such as 'The bipolar bear, the ghetto gecko' (D3). For these artists, words, text, letters had become fascinating. This included tattooed bullet points, endless lists, poetry,

conceptual rendering of typography and the invention of a typeface for dyslexics.

Their metaphors and analogies constantly referenced novels and sayings. The design structure of a typeface could give meaning to practice. Using his typeface, D5 had intertwined words with mathematical references to describe each year of his life:

‘Year 1963 is one of many versions, it has a numerical version of year 1963. Then another way of rendering 1963, that is ninety sixty three so you are writing the word out.’

D2 and the approach to words

Poetry is very important to his practice. He talked about making a piece about Kindle technology. His wife had trodden on her Kindle, at a time when he was working with clay. He had written a poem about the transformations of the word. To visualise this he had made a cast of the Kindle to be in tablet form, to convey the idea of writing that reverted back to the time of Moses. His next step was to make text to overwhelm the piece. The text he had written for this purpose was stylised. ‘Entrenched in front of something else I have incorporated poems’. He continued to write poems all the time. One such poem was about Rudyard Kipling and his hunt for the body of his son, during the First World War, after he had arranged for his son to go to war despite his son’s bad eyesight.

‘Very tragic poem I have written about poor old Kipling, who pulled strings for his son to go to war despite his bad eyesight, then his despair because of the idiocy of warfare. Yes words seem to be good for that; they are small. I cannot take up a lot of space. You get a lot of information touching on heavy themes’.

D1 talked about words as potential art pieces, using shape and texture and feelings. She discussed the value of words:

‘Some words have wonderful feelings when you say them, some are just words and don’t make sense. I see an individual word even when I am mispronouncing it. What it creates is the pattern. I start to see yet another word, as a thing, not a scary word, it helps me write and think’.

When D1 was asked what this pattern was she replied that it looked like shapes that join together, that the words become shapes ‘with pieces of blue-tac clumped together to form another shape it connects to’. She found it hard to express this, yet it did feel like an emotional response she was looking to pull out from herself. This was an approach she used for writing. Some words she found ‘scary’, however they were not scary when she could make them in 3D form, which she could then visually walk round. For her, these words would connect and move around in patterns, not sequential sentences. When asked about the colour of these words, D1 replied that she saw them as pale blue. They were not spelled correctly; it was more a sound than word; it was an abstract thing:

‘Not as frightening as a word; words and sounds give good feelings, ‘voluptuous’ it’s a lovely word that has a different colour. It is green.’

Using this way of working with words she talked about her love from a young age of writing little books. When she was at college and she had to write ‘ridiculous essays’ but couldn’t, she used this approach to thinking to be able to do the work.

Section four: Views on approaches in creativity and production

For many of the D artists analysing could be problematic, there was a sense that thinking for analysis was small and thinking for concepts was big.

Analytical thinking would pin ideas down too much by making everything too tight. If the artist analysed all the time they would not engage with their practice:

'If you try to analyse creative life, you kill the thing'.

When the artists analysed, this was mainly through image, although words and text were very important in the thinking process to production. For one artist this involved bold shapes, bold colours and patterns. For the younger artists, the audience was especially important for acknowledgment of the work and in order to move forward with the next production stage. For another artist conceptual thinking meant he would visualise in colours. It would be about a feeling drawn from colours.

Different media were utilised all the time. Most interesting were the interwoven ideas about text within concepts and visual production. Text became stylised, for example poems became part of a visual piece, typography became abstract and symbolised different meanings about personal life. Poetry caught emotion. Letters could be moved around in dreams and became iconic. For one artist to creatively explore a process of conceptual thinking to production was like being in two zones:

'You go into a space. You have to be in the right place at the right time, nothing else matters - the memory of that link is real – it's like being electrocuted'.

'It is similar to feeling an internal physical thing and then visualisation - It's more as a feeling rather than a picture - despite being visual - when it comes to creativity it is a special place. It is about space, having an internal space'.

An analogy with golf was used, with space being factored in the game of golf; time and space were joined until there was a point where there was a special space and a special bit of time.

Space and time were described as integral to creative production. D1 saw her production as a spiral, which would carry on, sometimes stuck in a circle, which then pulled out into a spiral. This spiral was at an angle, and in 3D. She could walk round it.

D1 and multi-dimensional thinking

When D1 thought about her creative practice this was seen as a spiral of thinking which started off small, grew and included colour. 'It flattens, extends itself, sits at a wonky angle. It's 3D I can walk around it'

The colour was important and could vibrate. She thought in colour, some colours would absorb her, such as red. She could get lost in soft and velvety yellow. Yellow came up a lot in dreams. There was a thickness about different colours, she liked to be stimulated by the differences in paints and inks. She could move around it all, she could visualise form and colour vibrating together. There was no word for these feelings. She would use all her senses to hold onto her thinking in this way. When scribbling and writing shapes she could smell the qualities of the shapes to help her focus on the idea. The experience was quite ethereal, not solid.

'There is a half joy trying to keep hold of it as it is not solid yet!'

Some ideas she did make in solid form such as 3D paintings. She had become fascinated by movies from a young age. Works became more meaningful if she could interact with others. One such piece of work was with friends, out in the park; she would get a bag of rubbish and start making things. People would come and join in; eventually there would be sculptures hanging from the trees in the park. 'It is an enjoyable way of connecting with people'. Adults will ask what they are doing. Children just come and join the making. She said that she saw words as potential art pieces to collect, to form her work.

D5 and multi-dimensional thinking

D5 viewed objects in every way; the object would become multi-dimensional in this way of thinking. As a designer artist he could take a photographic representation of something 3D as being representative of time and space. A graphic designer by trade, he essentially worked in 2D and print, but the content could become multi-dimensional. He talked about the development of his work in book form and the idea of a book as a 3D object with pop up images. Although, due to his training, he felt he still had problems as he would still tend to think in 2D print.

D5 discussed the challenges of a career path in teaching and research and the actual practice. His practice, which had been very dominant earlier in his life, was now re-motivated. He now saw his practice in terms of potential outcomes and in a range of manifestations, which included movement, colour, 2D and 3D images. Life was a series of different stages of developing skills to investigate things. When asked how he thought he remembered he answered 'visually but doesn't everybody?' *'It's like a journey which I remember as a film'*.

Experience and emotion

D2 talked about Graham Greene's novel *Brighton Rock* which he had been rereading. This reading had reminded him of his experience at a young age of being frightened by 'crooks and blousy, big-bosomed stout drinkers'. This reminded him of being on the fringes of society. He talked about people outside of society. He viewed his dyslexia as a disability that made him have a greater understanding of the human condition. This had made him feel outside of society. He remembered that when he was a child there was a game of jumping onto a swing and saying the letters L.O.N.D.O.N. This was all he had to remember but he could not do it. He would say six letters and then jump on the swing.

The other kids thought he was strange but although he felt ashamed he still wanted to jump on the swing. *'I still want to jump on the swing now'.*

D2 childhood isolation

D2 was ostracised when younger and still has issues about organising his life:

'I could put this down to "wallyness" or dyslexia! But happy to put it down to dyslexia.'

D2 talked about how dyslexia made him aware of everything around him. He had to try to understand and make sense of unfolding events. It made him more aware of signs. D2 wrote a great deal and his observations would be used for the stories he wrote. His stories are intertwined with his visual work. When asked if he saw in a detached way he responded that it was more about a means of survival:

'When I was little I used to use vending machines that took a 6d piece. There was a one in three chance in getting it right. Each time I had an encounter I would look at the bars of Milk and Milko I could not see - they all looked the same - it was chance. It was that - having to guess and not knowing, so you pick up other clues. I had to buy biscuits. I would have a picture but could never understand the writing and think why have they put writing over this lovely packet of biscuits - ugly. So this idea happened that you had to look carefully - which means you have to see a bit beyond what the average person sees'.

Being dyslexic meant a lot of time thinking, being quiet and observing.

'The nice thing about being older is that making a fool of yourself no longer matters'.

A repeated pattern of behaviour was to gather, collect; scavenge information, ideas, materials to save for when they could be useful.

The artists would be excellent at making a little go a long way. *'I am wasted I should have been in a prison camp. It's a bit like being part of a flock of magpies'*.

D1 talked about her father who is colour blind and so she would have arguments about colour with him. This experience made her even more confused about what was visually real. She loved geometry as this made it logical and then real again. So when she was problem-solving she would put mathematics into the situation, for example; how does the angle change, what is the shape?

The D artists said they were content with themselves; however, it had taken time and they had to believe in the value of their work. D5 concluded 'dyslexia, it is what I am'. He considered himself a practitioner more than anything. Being intuitive was part of being dyslexic. It was not about analysing what you do; you just did it. He talked about his creativity as non-intellectual; that it was intuitive. 'It feels good, it feels right'. When he had been at school, he remembered vividly, his art teacher saying to him that he seemed to know exactly what his piece of work was going to look like. He did have the impression of knowing clearly what he wanted. D5 went on to say that he knows when he is thinking, he does this visually and he has a strong image that is close to how he will produce the work. He thought everyone worked like this.

Section five: Creative professional practice and reflection

All the artists were keenly aware of their own professional practice. All of them were actively building their practice. There were clearly different stages to their creative careers based on the accumulation of skills and knowledge.

Interestingly several of the artists had learned how to manage different areas of their professional lives in a way that put different professional areas of work into set categories.

D1 talked about managing all the different aspects of her professional life. She liked to work across a range of disciplines that were 'boundlessly absorbing' and so she tried to keep the physical things in her life uncluttered. For example her flat was quite bare. She felt there were two sides to her; the creative side was intense with the other side being the office job, which made her want to 'jump off buildings'. There was much she wanted to do. She said she wanted to 'live ten times!'

The final question of the interview was posed to the artists, to find out how these visual artists reflected on the interview process.

Q: When you walk away from this interview how will you visualise this experience? How do you see everything?

'Grey; we are in a grey room. Challenging, these questions are unlocking deep thoughts. It has been intense, emotional and tiring. It was more about emotions rather than visual memory. But doesn't everyone think visually?'
(D5)

'Everything is very fast with incredible rushes. I have had to physically slow down as my thinking can get faster and faster. It is like a spiral and I keep getting spun round and round. Its all going fast like a train running fast'. (D1)

'It's like two zones - you go into space – it's an internal physical thing rather than visualisation - the memory of the link is real. Thinking is a sort of impact thing. It is more a feeling. It is about space having internal space'.(D2)

'I will remember your face; the conversation is in 2D in bold shapes and patterns'. (D4)

Everything is colour in my brain; also emotion is colour. This interview is in colour, it is like a yellow. It is fresh, a palish yellow almost going white. It is fresh knowledge in my brain. I will probably add that freshness to colours that I want to know about. I have never worded this before. I do not know what it is - as a tangible object. I can feel texture' (D3).

7.3.2 The non-dyslexic artists

Section two: Ways of interpreting ideas

Most of the ND artists used text-based research methods to underpin ways of interpreting information for their ideas. Reading, note taking and keywords were important. Artist ND1 made notes of words in her sketchbook. These were single words within mind-maps. She talked about key words, which she would retain for a period of time. The key words were the starting point to gaining a flow of ideas and were important to the early stage of her thinking. Artist ND1 did not read very much, however the key words became a main anchor to investigate meanings. They were a way of keeping her in touch with 'key elements and ideas or finding new aspects of the same idea'. She played with language, with the use of wordplay for different meanings. New directions branched out from central ideas to new bits of language:

'So I do a little chart where the words connect. These associations are kind of intuitive, almost random and not analysing at all'.

Logic

The artists would use a variety of methods to map out and capture their ideas. ND2 would free-write his ideas, bringing language and visual elements together with everything on the same page. He called his doodles 'development work'. Sourcing ideas was approached in stages; in later stages technology would be used to reference any theoretical perspectives that might underpin his interpretation of ideas. He used a sketchpad when trying to force an idea out. If he wanted to work directly in any place or at any time he used his touch pad: 'It is coming directly from your head'.

He had set up staged processes to approach the way he interpreted ideas. By interacting with the environment he made the experience part of his thinking.

Artist ND5 had much less to say during his interview. He was more interested in the format of the original questionnaire, which he felt repeated themes which he found confusing. He talked about his stepfather who was an action-based man and a role model. ND5 needed to be logical. Fine Art, to him, was a logical process of making sense of the world through geometric shapes.

Narratives

ND4 read and researched the history of ordinary-looking places as a narrative, a mixture of cultural geography and archaeology by drawing from archived information or the Internet. As with three other ND artists, ND4 found reading and writing a critical part of making, making notes rather than drawings.

ND4 academic approach to research

The archived information started to give her ideas about these narratives connected to places:

'There is a waste ground riddled with ancient stories where there is a landlocked pool, a marshy pool. I am doing research into folk tales about Cornwall. I found one about a white horse seen in this water. Some people thought it looked like a sailing boat, a Cornish lugger. That sparked off ideas; as a result I worked with tissue paper to make a lugger like organic sails that were five foot high. I went out in the early hours of the morning two years ago in August and I filmed this and turned it into a piece of work.

A literal translation of the story. Another piece of work I am doing, I have created a folk tale, which I laid out beside the river and then I installed it.

The folk tale was about 20 Cornish pixies.

I installed this so people walked across the Downs to find the site. When they found the site they had to copy the story. The writing is not remotely to do with critique; it is to do with creativity mostly. It is to do with words in the creative sense'

Connections

Connections with nature, the environment, the here and now, were rich sources for ideas. It is interesting that all the ND artists interviewed were methodical in their approach to sourcing ideas. One artist, ND3 was keenly aware of her whole environment, she would recall this in 2D. She would say that she was regimented and linear in the way she thinks and seeks to interpret ideas. It was very interesting to witness how ND 3, ND 4 and ND1 talked about visualising concepts and ideas as stills. By the end of the interview they had realised it might be possible to view the making of connections in another way. Artist ND1, interestingly, thought in a series of stills, yet she would have a process of play where the connection she recognised happened at a subconscious level. This was a linguistic connection, which included aural and visual levels. 'I don't stop, I just go with it and then I see how things connect'. She would discuss this flowed thought, yet, at the end of the interview, reverted to discussion of her way of thinking through a series of stills.

Section three: Thinking strategies - logic

Connections for thinking were discussed and analysed at great length by the ND artists. When asked how they visualised their thoughts, they all responded that this was, in the main, as either 2D or 3D. Other ways of thinking tended to be compartmentalised as a set of components within the main train of visual thinking. For example ND 2 would investigate a project by thinking in terms of data.

'I want to look at how I work this all together. I start to think of separate bits in front of me, how I can connect them'.

At the time of the interview he was thinking of an idea around biodegradable reading. Each page would degrade as the reader turned the page, until the final page was a series of holes. This idea had come out of the action of note taking, which ND2 thought limiting. These ideas were stored as thinking data. The theme of interactive reading connected to the physicality of books and continued with the visual thinking about a 3D book he wanted to produce. Each book page would build up a narrative about people.

'The idea came to me on a bus. I was looking at the theory, and phrases came to me about people on that bus. This triggered change in the visuals in my head'.

ND2 thought about the book pages as separate pages cut out. Each thought had a logical pattern. When asked what these patterns might look like, ND2 talked about spiral diagrams, which appeared like a huge confused web with too much going on. This was a very similar visual pattern to many of the dyslexic artists who would think-travel within these patterns allowing them to move at a variety of speeds within a time frame. The visual pattern for ND2 was considered confused and to be tightened up, to be made sense of, to take at one step or two steps to get the sense of the thinking:

'When you have the visual you then move onto the next thing to keep going so it encompasses all you want there.'

These webs of thinking were sequential with an emphasis on logic to ground the thinking. This is shown in the interview with ND3 who talked about compartments to store information. She had talked about movement and the effect of her surroundings on the ways she would see and remember situations. This was mainly in 2D and 3D. She tended to remember in 2D and linked this to meningitis, which she said had affected her thinking towards right brain configuration. When ND3 would see in 3D this was linked to positive experiences.

'I remember in 3D because everyone knows what a daffodil looks like, a may tree or a cherry blossom tree. I didn't know this is hard to think this way!'

As the interview progressed it became clearer that ND3 had a way of thinking that recognised 2D and 3D visualisation. Yet she had not considered how this seeing might integrate together '3D I can see stretching backwards'. ND3 could see in 3D linked to movement, whereas in 2D this was linked with sequences. During the interview ND3 was asked how she visualised a week if this was a shape. The week ND3 had visualised was a long box with seven compartments. All the compartments were of the same size 'just like blocks, a long line of black blocks'. At the end of the interview she said that she had never been required to stretch her thinking in this way.

For ND 1 the environment gave her the inspiration to make thinking connections. She had made a controlled effort to be random in her thinking and in response to her surroundings:

'It is happening all the time, gathering information. In that sense there is not a trigger because it is completely random. I can get stopped from the thing I am doing to notice something else.'

To have this random approach she had developed a way of responding to stimulus that was much more immediate. This meant she would tune into her surroundings to become sensitised to things she might usually have ignored:

'I become more focused on the things that I do not notice or have overlooked. It could be something quite unrelated to what I am doing at that time but I become interested in a shape or a sound'.

ND2 was asked if his work was multi-layered with visuals and sounds. ND2 talked about his work as fixed within the discipline of publishing. He saw this as 2D without sound or moving image.

To work in another way did not interest him, yet he could see the value of other media and would draw source material from films or listening to music:

'I like the way it makes me think, the input to my work, it triggers that different way of thinking.'

When ND2 asked how he remembered, he talked about remembering sounds and linking these to his emotions. At this point in the interview ND2 remembered his journey to college that day. Interestingly, this was as a series of interconnected feelings and sounds. He could remember his mother and father talking and how he felt about the conversation, then going to the bus with screaming kids surrounding him. This became real to him (as he remembered within the interview), to the extent of really feeling and hearing the situation again. If he needed to remember his thinking he would take a tape recorder to capture information: 'It gives things a lot more resonance'.

Yet he could not remember this journey as moving images. When prompted ND2 could remember a mixture of elements, with sound being predominant. It was noticeable with the ND artists that their self-awareness of their way of thinking grew as they engaged in the research interview. For some artists they mentioned that they had not thought in this way and the interview had expanded the possibilities for them of a more integrated way of thinking. This thinking could include movement, visualisation, sound, time, space, solid shape, and colour.

The interesting point to make is the contrast with the dyslexic artists who would tend to integrate these levels of thinking at the same time whereas the non-dyslexic group tended to compartmentalise aspects of thinking one at a time. This planned approach to 'divergent tangential thinking' (see Glossary, pp. 293 and 296), was in contrast to the D group of artists' way of thinking who made connections by engaging with tangential thinking, innately integrating a range of ways to experience their surroundings or world.

This has been termed 'multi-dimensional thinking' within this research and is a research focus.

Logic

For ND1, ND2, ND3, ND4 and ND5 there was a logical approach to thinking. They were connected to their environment and drew inspiration from either their immediate surroundings or from a wider context of the world. The contrast with the D artists was the planned approach the ND artists had to their thinking. To enable flowed thought, all the artists had developed strategies to have more emphasis on tangential thinking. ND5 had a logical process for making sense of the world. 'My fine art has become a logical process of making sense of the world through geometric shapes'.

ND5 had devised his own system of symbols that conveyed a language not based on any sound. This was a new alphabet made up of lines that could be put together to inhabit a space that conveyed a concept. To remember and think ND5 would do this through visual preference. When asked about his journey to college that day he said he could only remember this as a series of stills.

ND2 discussed how he would logically reflect. He would start methodically by looking back through his recent work. Constantly going back, sometimes he would visually lay everything out side-by-side to check and recheck visual cues. He would have to go through the 'looking role - almost beating myself up over it, not ever sure if it is good enough'. The 'Piracy Project' started him thinking about movies that get downloaded that were seen as theft by some and not theft by others. He started to research the Internet and read up about it in a logical way. He would try to add logical meaning to this work to make sense of the message he wanted to convey.

Section four: Views on creativity

All the ND artists recognised their connections with environment. This was a source of ideas and acknowledgment. The testing of creative practice tended

to be an 'academic' process for the ND group. This was thinking underpinned by research and logical planning.

Thinking at a variety of levels tended to be compartmentalised; to be tested at planned stages of practice. ND4 worked in intense bursts. She would see the creative production in her head as a piece of narrative. This was informed by rigorous research through reading and writing. For her this creative energy had to be tested with an audience and ultimately herself. She would get stuck with her process of ideas to production. Rather than 'meandering off' she stayed focused on the idea she wanted to realise. She said she could only 'see' the work when presented to an audience. As this process was stressful she tested elements prior to showing the work. This testing was to measure the impact of the creative practice.

At this point in the interview the researcher observed that the D group would produce work to be tangible inasmuch as the outside world was often non-tangible to them, whereas, the ND group would make the production tangible within a process of making, to test ideas and development of practice.

ND4: academic approach to investigation

One example of this testing was the flooding of a room to see the immediate effects on the public. The project was to see a boat in a room; to make it happen mattered to her. The public could sometimes view when she was making so that she could incorporate their responses to the work. She said she was not material-specific, that ideas form creativity rather than the process: 'I am on a trajectory to realise the idea'.

Another project was 'The 20 walks', about patterns of the Downs. This was an audio recording of the footsteps and the reciting of stories. The project was well researched with the artist reading about other voices that had inhabited the Downs. Events such as a murder and the groups of people who lived there were documented:

' I will look for bits of information I want to use. I think there is something out there if I look hard enough. I think what I am trying to do is tell the truth'.

ND4 made an interesting observation when talking about the need to test her work:

'Rather than scientific people who are about honesty and truth, artists are about impact - they don't have to tell the truth. It does not have to be accurate so the way the idea comes is a mixture of ideas that pop into the head and other ideas will come along from the reading and the research. This is investigation that starts to evolve.'

Another example of her work was a soil ordinance survey map of the Downs. A cardboard model showing the contours of the Downs was produced. This was populated with images and symbols as historical references to the location. She left it over a period of months, onsite in the Downs, to watch this work disintegrate. To see it break up was sad for her but it was a finished piece of work of a temporary nature. The evidence of the stages of change was vital to the piece of work.

Reading - writing

Most of the ND artists would test out ideas, either by writing or through visual representation. They would often 'mock up' or do rough drawings to get the ideas out. This is usual art school training and it is also part of the way the D group worked. However the difference with the D artists was in the approach to testing the work. For the ND artists this was as an academic process of research and part of the actual finished production. For the D artists this was to make connections that would move thinking off on another tangent.

For the group of ND artists, reading was integral to the process of gathering information, as part of the research process to inform their practice.

Notes, writing and data were stored and filed in a planned and rigorous manner by the artists.

Relationships

For all of the ND artists relationships were essential to their work. For ND2, ND5 and ND3 family relationships were influential. For ND4 and ND1 this was a relationship with their audience. For ND2, ND5 and ND3 personal relationships underpinned their emotional way of navigating the world. For ND5 his family was important to him; his relationship with his stepfather was essential to how he saw himself, which was action-based. He wanted to get on with it; 'do what I have to do' and to consider where he was positioned within a set of values. ND3 considered that she ran her life very regimentally. Her husband and her father had been in the army; she felt this influenced her way of thinking. She did not allow her thinking to go off at a tangent; this was controlled: 'I just have to curb myself - I think I can use this another day'. For ND2, family is paramount: 'my parents can do no wrong, they are kind and considerate, they give to others and do not expect anything in return'. His parents kept him grounded within a world he considered had become more and more dysfunctional:

'I feel quite detached from this world, I think it is this 21st Century culture, I walk through the city and see these stereotypes, I think in an uneasy way about it'.

ND1 wanted to share her work with others. When her work became an object that existed for other people, she felt her work had been done. This was now a new phase of the production. The first phase had been integral to her as part of the art form. The second phase was, to her, the reverse, where new beginnings trigger new ideas through the presentation of the work to other people. The work became tangible with 'intervals where you can go, so it is a useful process to show the work'.

The audience was absolutely integral to ND4 and her work, as she was looking for recognition that would ensure her work would be commissioned 'to make stuff'. To her the completion is not important, the installation of the work and the audience response to it and their interaction with it was important. This was part of the creative practice. To ND4, people were part of her work:

'If people have a memory of the work then the work has succeeded, I like to hope they will remember - the mad artist they just met. If they have a memory of it, it has made an impact. If people can get their hands on it, like relics, it is the whole process of subscription, when you work in an intangible way.'

This was in contrast with the dyslexic case study installation artists, who would think in terms of the audience feedback as capturing information to inform work at a later stage.

Section five: Approach to creative production

How the artists would think about creative production was a key element of the research interview. This format of the interview now became different to the interviews for the D artists. There was much more questioning or prompting for this part of the interview to extrapolate responses. In many cases the artists said they had not considered these different ways of conceptual thinking about creative practice. The D artists had tended to expand on this discussion without many prompts.

Questions to prompt ND3

- When you remember people do you remember their shapes first?
- Do you ever go off at a tangent?
- You talk about scanning the environment for visual stimulation is that sequential in stages or spiraling off?
- When you walk away from this interview how will you remember it?

ND3 had had two bouts of meningitis earlier in life that might have affected her memory. Colour and shape were the visual elements that she would find

meaningful for her immediate creative recall. She did, however, find it difficult to visually remember people and attributed this to her meningitis. The effects of the meningitis meant that, for a period of time, she found facial recognition hard to decipher. She felt her short-term memory was not as good as before. Because of this injury, she believed that her right side brain had taken the lead in her thinking therefore the recent ten years had seen a flourishing of creative energy. However the way she planned her life and her creative production was on a course from which she did not deviate. On the occasions her thinking had not been linear, she felt her brain had spiraled 'out of control' and this she had to curb. She would curb this creative thinking because she felt she needed to concentrate on what she was doing at that time:

'I do have spiraling ideas where I will zoom in on something. I think that is it, then I become regimental and I see the process from beginning to end. I am quite methodical in the way I approach my work.'

When ND3 was asked how she might remember the research interview she felt she could not answer the question, as she now needed to reflect.

Questions to prompt ND1

- How do you remember?
- If you looked at your pattern of networks how would you remember this? Is it 2D or 3D and could you walk round it?
- Would this have sound?

ND1 talked about 'playing with continuum, as something linear, ever expanding as a kind of pattern'. She talked about responses and links to her work that made radial patterns from starting points to an end. When asked how she conceptualized this she discussed a linear experience.

ND1 on linear production

At the time of the interview ND1 was fleshing out how she conceptualised her thinking about production. A piece of work she was making was based on the idea of a geological core of 8 metre lengths, to be walked along as a linear experience. This was to be a long thin expanse of knowledge and information. Although linear, this piece of work existed in 3D. ND1 was investigating how this fitted and worked in space and time. She felt that something was changing in her work and she was in a transition period and this transition was from 2D to 3D:

'In a way, I have created something made of a sheet of paper as 2D then stacked it in a line into space and given it time and space. So there it is, I am in transition stage becoming more 3D.'

Because the interview discussed transition at this point, the researcher gave the following prompts.

In your mind's eye does this include the piece being experienced as:

- A film moving?
- Do you walk around it?
- Is it a series of stills?
- Do you hear things?
- Do you have a sense of movement?
- Is it colourful?

'I remember things in stills. Movement is not a feature. Now on moving around things, I felt with painting that I wanted to climb into the painting. I didn't it, was too flat. It was standoffish. I never resolved that desire to be part of the material. How do I think? I mean I record moving images in my mind. I think back in a few pictures. I have a single image of pieces of work I may be looking at. Yes it is still in 2D'.

Questions to prompt ND4:

- Is the memory of your audience important to your work?
- When you recall a piece of your installation, how do you remember it?
- Is it in a multi-dimensional way, 2D, a series of stills, 3D, movement, hearing sounds; what happens?
- Can you walk out from your way of seeing and walk round things?
- How will you remember this interview?

To be able to memorise the experience of her creative practice was the essence of the work for ND4. Her work was constructed around the temporary nature of a piece:

'It is really important it takes a physical form even if it does not last long. It's the relationship with the audience experiencing the work'.

She talked about working in a non-tangible way so that the photography was the 'moment of evidence', changing the way the piece was viewed. The nature of the work was to do with space and curation, looking after the materials and resources. ND4 positioned her work outside what she termed 'subscription tangibility'. This was when the artifact was of paramount importance, as a creative relic, to be placed in the market at a price. To ND4, creative practice was living and therefore she placed her creative production within living environments. She produced the work for the moment:

'I am not a person for the whole process showing in a time-lapse way. I do not need to reveal all. I don't think people need that. The practice is private, then it is public presentation, and then it is dismantling. On that basis it is anarchic. Completion does not have to exist once the job is done. How important are the mechanisms that people understand the nature of the work? You go through the process of making and the film or the photo becomes the recording. People are not interested in sharing a process when a thing does not exist anymore.'

The making of 'stuff ' was the creative energy, not the completion. The process was the piece and memory was the evidence. How this was captured was the essence of the piece, for example, audience engagement with the environmental changes, narratives and visual records. The interesting part of the discussion was how memory and recall played an important part in the creative production.

For the D artists, film, time-lapse film and photography was their way of making a record for their own creative practice. The audience had far less engagement in the pieces as part of the story. This had started to happen in the second research exhibition 'Ways of thinking 2' when time-lapse film had captured the exhibition audience's responses to the work. They were still viewers though, and not part of the performance or the changes to the piece of work. For the dyslexic installation artist, at the first research exhibition, installation was a representation of his world. He did not invite people to be part of or create the world with him. This would clutter up his world too much. The installation was a representation of his world that he was making tangible.

For ND4 she was making her creative world non-tangible and people were invited to be part of that and take on the creative practice. It was tangible and based on experience to be then broken up by time and vanish. To ND4 if people had a memory of the work then it had succeeded.

ND4: attitude to audience participation

The memory was the 'final piece'. If in six months time people could recall what they had seen, this became part of the participatory nature of the work. She thought galleries needed to embrace a multi-sensory experience. Creative practice was, by nature, action-based practice and therefore action based in research and evaluation. *'As action-based practice, I perform these experiments, it is participatory, it requires people to take part, they cannot be passive'.*

When ND4 was asked how she recalled her creative practice she talked about how it was made and the memory it captured:

'When I think of the piece at night in the summer, when I tried to film. It is the physical process of filming.'

ND4 was then asked how she saw this process. She saw it as 'filmic' as though watching through a camera. She could recall sound although she knew this also as a silence. When asked if she could walk round this in her mind's eye, she had not thought of doing so but probably could now as the thought had been given to her. She saw all of this in colour and smell that was tangible, as real as her emotions:

'My method of recall is reliving the clarity of it, I am reliving the moment, I can recall excitement, anxiety, joy, fear'.

How will you remember this interview?

'The dogs coming through the window! The way of looking at something that I have not looked at from that perspective before. I remember that. Good questions!'

Questions to prompt ND2:

- In the survey, you place books and discussion at a high score, books are text-based and discussion is aural. Where is your visual connection?
- How do you remember your theory or your visual work?

ND2 talked a great deal about the theoretical perspectives that informed his creative practice. ND2 was just on the point of completing his Masters degree. Most of the theory was drawn from the Internet. It was important to him to be

able to think in an 'imaginative and visual manner'. He remembered theory through searching Google for online books, looking at quotes, and then he would write this down next to his visual work. There was a visual element to the way he remembered theory; in the main, though, he recalled through discussion.

ND2: importance of theory

Theory is grounded in what he was doing at that time. He would read things over several times and then write them down. In a systematic way he would then go through the rest of the theories, take out quotes and sections and then group quotes.

In this way he got a good sense of what a theorist was talking about and then he wouldn't have to look at the text:

'They talk so much stuff that is not relevant, but then you look again and there is a quote that is relevant.'

His latest project was writing 12 sheets of small notes full of quotations and then to try and put them in order. He would link the quotes together for structure, linked with his ideas and their relevance. He would use his listing of theorists to remember work and why he used certain theorists. It helped him to think in a way he thought was visual.

Questions to prompt ND5:

- How do you remember experiences?
- How did you remember your journey to college today?

ND 5 had found the research questions (survey) difficult to understand due to his concentration levels. Many of the words had confused him: 'too many

words mean actions happening at one time; review, improve, experience'. ND5 had hearing difficulties from a young age. This had improved, but he now tended to focus on one sound or element at a time. His memory of life experiences and his thinking to production was through contained visual preference. He further described this through the analogy of Sol LeWitt: 'He creates whole rooms which contain marks, these marks put together inhabit a space'.

ND5 had built on this creative influence by developing his version of the alphabet. The lines denoted the letters and could be put together to inhabit a space that conveyed a concept. When asked how he would remember the interview, or his journey to college that day, he replied that this was as a series of visual stills. At the end of the interview ND5 concluded that he had found the discussion interesting in that he had started to see a different perspective in terms of visual referencing:

'I have made myself see myself through your eyes. I can only see eyes. I do not like reflection'.

The non-dyslexic artists worked in a systematic and evaluative way. Processes were measured and projects rigorously researched. Theory was drawn from text-based information. The artists were methodical in their approach to practice with set stages to production.

7.4. Summary of the fieldwork

7.4.1 The dyslexic artists summary

The D artists tended to think of the audience as the viewers or those who are the 'others'. To many of the D artists, the audience was 'the reader over your shoulder', whereas the ND artists had often talked about the audience as part of the artifact or installation. The ND artists would talk about family members as being important to their support systems and emotions whilst the D artists tended not to refer to family members and if they did this was with a more detached view. Some of this approach to collaboration was formed by prior

experience of schooling and relationships when growing up. The detachment from others 'not dyslexic' had been formed out of an isolation of trying to understand what was happening and trying to understand unfolding events. This made many of the artists intense observers of life; always on the fringes making sure of events by having a heightened sense of awareness. They were outsiders:

'Being dyslexic means a lot of time thinking, being quiet and observing.'

Interestingly all the D artists had an intense relationship with the written word. The research revealed how important trust is to these artists' identities and their relationships. As the written word had not, at first, been trusted, many of the artists had developed very personal relations with the written word. This was extremely surprising to the researcher and had not been an expected finding. These intense relationships manifested in a variety of ways. As the letter symbols could mean anything, letters and words would be conceptualised in an abstract, semiotic and symbolic way (see Chapter 8 p. 230). For example, D3 had even tattooed his hand with bullet points for note-taking.

D2 spoke eloquently about his life experiences. He had highly emotional and affecting childhood experiences that had left him a loner. This artist thought of life as a series of intense flowed experiences. This came out in his creative work, which included poetry and the visual arts. His poetry was part of his visual art. Poetry aided his visualisation; he enjoyed the beauty of words, the sounds that conveyed emotion and this was all part of the energy of creating his three-dimensional pieces. For this artist the written word had a deep connection to emotional life experience and childlike wonderment at the world. D5's relationship with the written word was much more academic.

He had researched a language of typography that could be more accessible for a dyslexic person. He was a graphic artist and the text conveyed an iconic and symbolic quality within his visual work. There was objectivity to his approach, an approach that was far more analytical and multi-layered. There was a definite goal that was conceptually embedded within critical analysis.

This relationship for all three of the D artists was about making the written word tangible, whether it was about the management of text, the emotional connection or the conceptual idea. All the artists were engaged in a series of challenges with their work; they needed to work in a solitary way to gain clarity with a wide range of visual metaphors and mediums. To the D artists, letters and words were not just 2D; they moved, they were solid, flexible and they had colour and in some cases sound. Survival came up in terms of existing and knowing who and what we are within the human condition. This was particular to the dyslexic group when they would refer to childhood experiences. There were some intensely seen and highly imaginative ideas drawing visual and aural narratives from a child's way of thinking: for example, one artist talked about his 'Bipolar bear'.

Many of the D artists talked about points of reference. Often this was explained using metaphors or analogies such as the compass circle that has a needlepoint to make an impression. The artists would talk about connections that were multi-layered within a spatial context. These were visual connections as part of a journey with the points connected in a 'flowed continuum of thought'. This was described as an 'internal space'. The artists would describe these points of reference differently, for example as a point that would expand so much that the thinking would have to come back to review the steps made; 'back a couple of steps'. This divergent thinking (see Glossary, p. 293) did not travel too far away from the point of reference unless another point was found. The interesting finding was that the D artist needed structure when thinking in this way. All but one D artist (D4) could immediately conceptualise ideas in a multi-dimensional way.

Production made thinking tangible. Space and time was part of production hence space and time was part of thinking. Time would often be blurred; time could be relative with no past, present or future. The tangible nature of their production would however root their thinking in one zone of the 'here and now'. The production of a piece of work had to be finished to be tangible. The work became tangible through the contribution of these people.

7.4.2 The non-dyslexic artists summary

Experiences and relationships

Relationships were influential, both within personal life and with the audience. This provided emotional grounding for the ND artists to navigate their creative world. For one artist his relationship with his family kept him grounded in a world he saw as more and more dysfunctional. All the artists referenced theoretical influences, researched their influences in a rigorous way and were keenly aware of the creative terrain they were operating in. For example, ND4 coined a phrase for her way of working which was 'outsider subscription tangibility' (see Glossary, p. 295). Anarchic practice was considered to be one that did not conform to the usual curatorial practices or the collecting of art culture. When the work was completed it did not have to exist once the job was done; the artwork did not have to be tangible.

Creative Production: technology-research-logical

Reading and writing down research ideas were the main ways the ND artists interpreted ideas to produce work. Writing took many forms; this could be mind maps, note taking or longer narratives. For many it was the use of key words to keep to the point. Key words were a tool to keep focused on the meaning or the key elements of the investigation. For all the ND artists the approach to the research was in stages as a planned and logical approach to making connections for ideas. For some it was through a premeditated approach to tuning into the environment, for others a process of sourcing information in stages of translation. This process would use technology, sketchpads, note books.

For all the artists, the process of thinking to production was systematic and logical. For example, for ND3 it was a logical process of making sense of the world through geometric shapes. All ND groups approached their production with a methodical, theoretical and analytical mindset. This description is understood in education as an academic approach. Reading up on the background topics to a concept was critical to many of the ND artists. This reading would include a very wide range of topics; however this did not preclude 'flashes of inspiration' or 'spark moments'.

All the ND artists recognised their connections with the environment; this was a source of ideas. Their creative practice was positioned in a state of testing reaction to their work and to reflect on response to further develop practice. The iterative and active dialogue with the audience and their surroundings made production more tangible.

Testing of the creative practice would include the audience before any showing of the work. Often the status of the creative practice was positioned as a state of testing for a reaction to tangible production. For the ND artists this planned process was as academic research and part of the final finished production. ND4 had taken this planned approach to a high level where she made a controlled effort to be random in her thinking and in her response to her surroundings. She would prepare herself by tuning into her surroundings to become sensitised to them.

The truth of the work was part of this process with the audience. However ND1 suggested that art was about impact not about truth. Yet when it came to the making of the work, truth to oneself was vital to her exploration. ND4 would invite the audience to be part of the making to include audience response to the development of the work: 'I am on a trajectory to realise an idea'. These artists tended to be a group of research-based thinkers. To share the work with others was important and part of the creative thinking process. When the work drew a response then it existed for other people. The work would then go onto another stage of development or be finished.

With new work often the artists would present ideas to others to enable triggers to thinking. The finishing of a piece could be about stages of a process or audience response and interaction. To be able to capture memories of the creative experience was essential. Time-lapse work was not a way of working, as ND4 did not feel the need to 'reveal all'. It was more about how she could pass the intellectual capital of knowledge on to the audience. The memory of the existence of a piece of work was important, 'as the artist existed to make an impact'.

Often the ND artists could only see the work when presented to the audience. Many artists found this process stressful and they would test elements of the work to a range of audiences to measure the impact before a final showing. For some artists there was no final showing as the work was part of the environment and audience response; it was therefore ongoing until the work had no tangible evidence of existence. The question then was, how do I try to capture this?

The final question at interview for both groups of artists

'When you walk away from this interview how will you visualise this experience?'

This question was revealing in the contrasting responses of each group. Many of the ND artists said that the interview gave them a new way of thinking about production. Several artists said they were in transition mode with their creative practice. Often the work was based on rigorous research from which production happened. One artist described the research as 'a long thin expanse of knowledge and information'. From this linear process of research several of the artists found transition from 2D to 3D a complicated process. They wanted the work to fit into a specific time and space context. When asked if they could only visualise walking round the interview or their own production they all found this complex and could visualise in short periods of movement or as stills of images. The short periods of filmic movement could capture the emotional feelings at that time.

Not all of them had thought of this method of visualisation. Several of them considered they could do this now that this thinking had been discussed. The final questioning of the interview focused on the ND artists' reflection of the interview experience. There had been much more prompting of the ND artists throughout the interviews, whereas the D artists had tended to have a flow of discussion that made links all the time to experience, feelings and ideas. Three artists in each group were asked 'When you walk away from this interview how will you remember the experience?' The D artists talked about movement and changes in shapes and the viewing of a filmic memory. The ND artists talked about a sequential set of stills, a single image and a series of 3D pictures.

7.4.3 Concluding comparative comments on the fieldwork data

The data collection of the survey and the transcripts of the semi-structured interviews showed that the terminology of D and ND visual artists was similar, in describing their thinking approaches to production. The terminology was drawn from the training experienced in arts education and an example of precision of thinking within this language. However by the third stage of the semi-structured interviews, the rigor of the investigation showed that there were differences between the two groups in thinking approaches to production, differences of experience about where they were placed in society, approaches to collaboration, audience participation, differences in exploration and types of production.

Comparative summary of the validity of the fieldwork data

Differences

Several ND artists made their creative world become tangible and people were invited to become involved in the creative practice. Tangible experience could then be dissolved by the passage of time.

The D group would produce work to be tangible as the outside world was often problematic to them. All the ND artists recognised their connections with environment. A majority of the ND artists would test out ideas, either through

writing or through visual representation. They would often 'mock up' or do rough drawings to get the ideas out. This is usual art school training and it is also part of the way the D group worked. However the difference with the D artists was in the approach to testing the work. For the ND artists this was as an academic process of research and part of the actual finished production. For the D artist group this was to make connections that would move thinking to another tangent.

There was also a difference in approach to collaboration. The D artists had tended to have an intuitive way of collaborating together as exemplified in the case study exhibition (Stage one).

Stage three revealed that the ND artists had talked about 'other levels' of collaboration. They analysed and tended to have a more guarded approach to collaboration with other artists. This approach, while allowing for audience participation, was often not comfortable and more territorial about ownership of creativity.

Exploration was an important element of the D artists' work; exploration was across a range of media. This was not the case for the ND artists who would work more within two and three dimensions. As discussed previously, the survey had shown that 46% of ND artists worked in two dimensions, 36% in three dimensions and 18% in multi-media. Whereas the D artists predominantly worked in multi-media, with 70%, followed by 25% who worked just in two dimensions and then 5% in three dimensions (see Appendix H, p. 316). Technology was second nature and used for all aspects of thinking to production.

Several of the D artists referred to their dreams. Dreams could allow problems to be solved; often the artists would wake up and try to capture this thinking quickly before it went away. The D artists described 'flowed visual thinking' as a collection of reference points ranging round in a continuum, starting small but growing and growing in thinking. The artists would describe these points of

reference differently, for example a point that would expand so much that the thinking would have to review 'back a couple of steps'. These journeys would range at tangents of thinking up to a point of reference and then move on. This divergent tangential thinking did not travel too far away from the point of reference unless another point was found. The interesting finding was that the D artist sometimes wanted structure when thinking in this way.

Everything became multi-dimensional in the artists' internal mind's eye. This thinking was described as rushes of a spiral going faster and faster. Colours were part of this experience and described as vibrating, emotional and absorbing. The ND artists talked about thinking as a logical pattern. These patterns could look like spiral diagrams or 'a huge confused web with too much going on'. This was considered too confusing and needed to be tightened up and not as a flow of thinking. To the ND artists these webs of thinking were more sequential and grounded in logic. Many of the ND artists said they had not ever been required to think in this way and found the questioning at the interview challenging. The D artists would integrate levels of thinking at the same time whereas as the ND artists tended to compartmentalise aspects of thinking. The ND artists would control random flowed thinking whereas the dyslexic artists would tend to innately allow a continuum of flowed thinking. This is termed multi-dimensional thinking, in this research, and has been shown to have a flowed visual pattern of cognition (see p. 215).

Chapter 8: Comparative analysis of findings across fieldwork

8.1 Overview

The comparative analysis of findings provides a summary of each of the three stages of the mixed-method research. This chapter is set out according to each stage, to explain the investigation approach, and to then analyse the main themes from each stage. Therefore the chapter will map and analyse key themes and present the findings drawn from these stages.

The research questions (see p. 10) sought to investigate the nature of dyslexic visual thinking, to find out if there were any distinctive phenomena embedded within both dyslexic visual thinking and creative production, and to then further debate the value of such within a socio-cultural context. As previously noted, the research focus is positioned within cognitive and experiential theoretical perspectives and this underpins the approach to the data planning, collection and analysis. The data analysis was carried out in consideration of these contexts. Each of the fieldwork stages flowed to the next stage to inform the research investigation. Stage one, the case study practice, investigated if there was any value to this research enquiry. At the third case study interview it became clearer that each dyslexic artist thought in various dimensions. Informed by the case study interviews and the two exhibitions, the research focus was formed and validity given to any continued research (see pp. 9 -10).

Main themes drawn from the case study sessions and exhibitions:

Stage one

Thinking patterns/ Multi- dimensional thinking

- Spark moments
- Multi-dimensional thinking
- Ownership of space and time
- Positioning ideas within spaces
- Movement contained
- Immediacy of action within a specific timeframe
- Unraveled scenes
- Time-lapse images

Outsiders/collaboration

- The human condition
- Outsiders /isolation
- Emotion in working
- Collaboration
- Tangibility of experience
- Tacit knowledge to explicit
- Iconography and symbolism

By stage two: the survey, the research showed that visually creative individuals develop the skill for visual thinking within a variety of dimensions. The survey results also showed that a higher percentage of D artists worked in a lateral divergent way than ND artists. The third stage of the research moved away from art and design terminology to research further the differences in thinking approach between the two groups. Further research at stage three showed there is a tendency for dyslexic creative practitioners to have explored this thinking skill through a wide range of media. This difference also manifested itself in the way each group tended to respond to the questioning. For the ND artists much more questioning or prompting was needed to elicit responses (see pp. 201- 208). The D artists would move in and out of concepts, unprompted, mapping reference points to explore the area of discussion.

The Likert scale responses, at stage three, revealed that visualisation tended have different meanings for ND and D artists. Through further analysis of the ten interviews, this research sought to reach conclusions on the thinking approaches of D artists in their visual creative practice and provide insightful findings from this analysis. This research evolved to build up meaning at each stage of the investigation. Thus the validity and reliability of the primary source data was considered within a framework that was developmental, forming three stages of fieldwork. There was consistent reflection of emergent themes and findings for interpretation of connective meanings in the data analysis. The following themes have resulted from the three stages of the fieldwork and are further analysed within this chapter.

The main themes to emerge from fieldwork: Stages two and three

Note, the words in bold show the core themes running throughout the stages.

Dyslexic Culture: **solitary** – words – obsession - trust – **outsiders** – **others**
– **observers** - truth-passion – **collaboration** – analogies - **metaphors**

Technology and communications: social media – individualism – expansion
– inspiration – exploration - **collaboration**

Production: Tangible and intangible experience – exploration – **technology**
– research - truth-reflection – audience – action - medium

Thinking approaches and interpreting ideas: patterns of thinking - **visual**
analogies - **flowed visual thinking** - spark moments – fast - **space-time** –
movement – facts – categorized – stills – writing - reading

Views on creativity: **emotion** – **innate** – imagination – **time** – logic – active -
creative truth - experimentation- playful - talent

8.2 Stage one comparative analyses

Thinking Patterns

The D artists were interested by complex messages differently conveyed to different audiences. This layered approach gave richness to ideas generated, consciously or unconsciously, when producing work. The approach was intuitive and embedded within the artists' thinking. This was evidenced through case study discussion as from September 2010 and the subsequent two research exhibitions (see Fig.12 p. 130 and Fig. 4, p. 116). The creative production for the exhibition showed a mapping of ideas through 2D, 3D, 4D, for a discourse through a variety of media that reflected the artists' thinking approaches. The purpose of the exhibition collaboration was to find out if multi-dimensional thinking occurs during production.

Visualisation, space, sound and movement were the primary ways the artists understood the creative process; the concept of 'multi-dimensional thinking' as a constant flow strongly connected to visual thinking. They utilised a variety of tools and methods to capture their patterns of thinking. There was a clear difference of approach in the way each artist referenced influence, concepts, meanings and ideas. This was manifested as quite different individual patterns of connecting ideas in the rendering of the work, such as a map of links to revisit, reconfirm, explore and change meaning. Other patterns of thinking included sound triggers, embedded in memory as tones and variations triggering reference points for thinking. This inspired ideas and spontaneous action with frequent use of visualisation to make sense of contexts and concepts. The multi-dimensional thinking approach was demonstrated throughout the next stages of the research as thinking within a range of dimensions from one to four; to include time, sound, spatial depth, linear and single dimension or one point of reference. This thinking was acknowledged by the artists as enabling them to build on conceptual understanding, meanings and ideas; to work in a flowed way. Flowed thinking would encourage access to a wide range of media for creative practice; videos, podcasts, YouTube and print.

Ownership of space and time

The case study pilot, with the D artists, had consistent themes. There was a consistent reference to space and the ownership of space. Much of their production was reflective and action-based to reveal the consequences of experience and to make sense of the environment they had to inhabit. Space and time were key features of the thinking and the practice; transition between place and time to capture experience. To make it real, the experience and the image were about how they see their work. Mainstream secondary education had been a confining experience for all the artists. Information could not be processed and 'fell apart in thinking'. Learning was done by rote, to meet educational expectations and was not understood. This in turn meant that the artists tended to inhabit a world of their own making and their own visual thinking. The language of image developed their creativity.

This semiotic approach helped them to learn new information, to capture information, and to make sense of the world.

At a higher level of visual arts education, the learning space was encouraged and owned by the artists. This environment gave space to critical awareness of learning. In arts education all the artists were expected to explore, question and challenge. Creative thinking was innovative and about seeing in a different way, producing something underpinned by concepts and ideas that challenged the artist and audience. In different ways, the artists captured information and ideas; through this process they would capture more information than needed. Journeys and the concept of time and space were running themes; compressed time in the form of films, YouTube and mobile communications captured experiences and journeys to gain reality and awareness of a place. These journeys returned to the same point many times to find new ways of seeing and to remember. Reference was made to a 'third eye', as being reflective and able to get the gist of what was happening. This was discussed as being a detached way of thinking, being able to repeatedly look at the same area to see new elements and be able to remember them. One artist referred to movement as a musical instrument, as notes repeated to make a whole score. These impressions would resonate in an unconscious way. This way of thinking was again discussed as the 'third eye', resulting in 'never becoming familiar with anything done' (see p. 100). This detachment from a way of seeing resulted in an effort to gain a sense of the world; 'do I look or do I analyse?'

The artists were interested in positioning ideas within new spaces and the ability to put images in different contexts. The work had to have symbolic multi-layered meaning with complex messages that could be different for different audiences. This layered approach gave richness to ideas, a flowed thinking in the production of work, with links to be made later, whether consciously or unconsciously.

Outsiders and collaboration

There were emergent themes that manifested as threads running through the empirical evidence throughout the research stages. One thread was the concept of being an 'outsider'. A characteristic of the term 'outsider' was the differences in thinking that did not build on the 'norm', which was defined as the building of relationships between concepts and emotions; the sense of being alone with one's feelings and emotions (see Glossary, p. 295).

Determination was a large part of the artists' dyslexia and they intended to live life to the full; to try to contribute and achieve. Some had turned away from formal education and others felt scarred by their experiences with fear building up incrementally at the recall of memories. The artists had a fear, at some time in their lives, that if they relaxed life could go 'terribly wrong'. Much of one artist's imagery depicted isolation, loneliness, snapshots of memory. The visual work evidenced extremes of emotion, fractured stories that were not linear and had no resolution. Evidence of this solitude and a feeling of being outside of the norm came from the artists' narratives and their sense of justice, resulting from complex times in their lives, in education, family and the workplace. The often-straightforward nature of dyslexic people was due to their difficulties with memory, which meant they had to be clear about information and contexts. This could be challenging to others who found the clarification and questioning an irritation. The need to make sense of things happening in the immediate environment made for a thinking, which did not quite fit into 'normal society per se' (see Glossary, p. 294).

All the D artists acknowledged that they felt like outsiders in society. They were different and many of their life challenges had been about how to fit in and position themselves in structures and systems they did not easily comprehend. Therefore they had managed this by either avoiding difficult situations, isolating themselves, quietly observing or developing a set of strategies that gave some meaning to a scenario. As a result they learned to explore and confront some of the challenges they had faced. The sense of isolation is a repeated theme in the artists' work.

The solitude was evidenced in the time-lapse films, the repeated return to a scene, the lack of people within a space, the narrative of the human condition and a sense of symbolic pathos. The artists explored and used a range of media, which dealt with the human condition, and with the containment of emotion.

The research pilot showed a growing interest in collaboration. The language that developed became a tacit way of understanding through a variety of formats of discovery, through language and ways of seeing. This collaborative approach was recognized as a tendency for D practitioners to become grouped, by the mutual experience of a communication understood during arts education such as studio practice. This theme came up again in the third set of final semi-structured interviews (Stage three), which took place five months later in March/April 2012. By the third interview session (Stage one), dialogue with the case study artists showed a greater interest in collaboration.

Collaboration resulted in a change of direction with new ways of working for all the case study artists. The data collection provided a valid start to the research enquiry by gathering and evaluating evidence about the D artists' thinking within a participatory and collaborative environment. This was a benchmarking of information from which the researcher made a judgment on the value and validity of further research. By collaborating, it seemed the D artists had made their work tangible. The research case study research exhibition (Stage one) had shown how the artists had worked together with little oral and aural communication but with an unstated understanding of the multi-faceted contexts of production. The artists worked within spaces that interconnected to produce a complete exhibition concept. The D artists were aware of this unstated way of collaborating and talked of the non-dyslexics as being the 'others'. For all the artists, their dyslexia was part of themselves that they accepted and that for some, they celebrated. Their strategies included working with sound, movement, visualisation and concepts of time and space. These strategies were to come to the forefront of discussions and practice as the research progressed.

Tangibility of experience, iconography and symbolism

For the D artists, film (time-lapse), mobile technologies and photography were their way of making a tangible record of their own creative practice; to capture memory and meaning. The audience had far less engagement in the production of work as part of the story. This was more about a personal journey as evidenced in the second research exhibition 'Ways of Thinking 2'. Here the time-lapse filming captured the audience responses to the work. Another example was the artists' approach to the audience and the installation. The audiences were still the viewer and not part of the performance. During the second exhibition one of artists devised a whole room of films and photography and invited response from the audience. The audiences were objective viewers rather than participants in an installation.

The case study artists tried to gain a sense of things around them. By the action of doing, they captured information. Information became more tangible over a period of time. Landmarks functioned as a symbolic trace of memory, often not populated by people. They were interested in the power of symbols and what this meant to their personal creative journey. The research exhibitions charted these relationships. The symbolic use of colours was echoed through to the finished artwork. Images were connected conceptually by questioning ideas of creativity and dyslexia.

8.3 Stage two comparative analyses

8.3.1 Mixed method: statistical and qualitative data

The reliability of the qualitative data collection was explored and given quantitative values at stage two and stage three. At stage two 75% of the D group were female and 79% of the ND group were female. 75% of the D and ND groups had obtained a degree. Gender and education were fairly equal across the ND and D groups (see Appendix H, p. 316).

The statistical evidence at stage two (the survey) showed that exploration was an important element of the D artists' work; exploration was across a range of media. This was not necessarily the case for the ND artists who would tend to

work more within two and three dimensions (2D and 3D). The survey had shown that 46% of ND artists worked in 2D, 36% in 3D and 18% in multi-media. Whereas the D artists predominantly worked in multi-media (70%) followed by 25% who worked just in 2D and then 5% in 3D (see Appendix H, p. 316) The D artists worked within contexts that were multi-faceted (see glossary p. 294) or in other words situational contexts of many phases, aspects or abilities. Technology was used for all aspects of thinking to production. Prior to the semi-structured interviews, at stage three, the survey had shown a contrast in approach to production between the D artists and ND artists. 82% of D artists tended to be lateral thinkers (see Glossary, p. 294) compared to 54% of the ND artists.

Establishing reliability and validity

The approach to the analysis for stage two of the fieldwork is to further investigate the thinking approaches evidenced at stage one of the research. Stage two of the research was an online survey with 40 respondents who were D and ND artists. Emergent themes informed stage two of the research. At stage two the data was collected from groupings of D and ND artists aggregated via age and female and male groupings. This stage sought to test the reliability and the continued validity of the research, by asking questions about educational experience, ways of interpreting ideas, strategies for thinking, views on creativity and approach to creative production. Stage three sought to examine these questions even further, to investigate any phenomena that might emerge.

At stage two, the survey sections two, three and four were summarised as a series of bullet points (see Appendix G, p. 314). Section five was statistical and investigated the 'Approach to creative production' written as an overall summary across gender and age and a comparative analysis between the ND and D artists. The approach to production was a key element of the research. Therefore a range of analysis was set in place within this qualitative research. This is to ensure rigour connected to any research findings.

Dyslexic culture

At stage two, preoccupation with words was revealed, with many D artists developing a unique relationship with the written word as poetry, typography and creative practice for the recall of information and often as a cathartic process to make links and work out solutions. This relationship made words tangible; this was also shown in the wish to make tangible their creative production and experiences. These were people who had navigated the challenges of the written word. Letters had become symbols for analogies and metaphors to explain ideas in a richer way; thus to create works.

The dyslexic position 'as an outsider' continued within stage two and three of the fieldwork. At stage two this was a narrative about feelings from childhood and schooling of being on the fringes of society. These artists were observers considering scenarios as they arose, reflecting and analysing before any involvement. They tended to work in a solitary way, yet when collaborating with other D artists they tended to trust this collaboration. They did not consider themselves part of mainstream thinking. They would not assume anything but protected who they were while valuing connections with their inner and outer environments. This collaboration was evidenced in the two research exhibitions and further investigated at stages two and three. The artists who were part of the survey were also invited to the exhibitions; some of them were part of stage three of the research. Several of these dyslexic people later expressed the feeling that they had come home; they felt part of something while not needing to 'explain who they were all the time'.

Their thinking could be unconscious and flowed without protected boundaries. This meant an immersion and expansion of conceptual thinking, thus they would lose awareness of any boundaries: 'The world could change in a flash, it could be unsafe'. Many of the D artists had learnt to be cautious when in situations that were 'not of their own making'. Both the ND and D groups would use metaphors and analogies in their thinking. This method of communication was much more prevalent in all the dyslexic groups although

the ND older female group discussed intuition, analogy and metaphor at a greater level than the other ND groups (Stage two).

Technology and communications

The D artists used technology to further thinking and amass a large amount of information to gain an overall picture. All the younger groups used mobile communications and social media extensively to network and source information. The ability to range in many directions meant they could map thinking to create an overall pattern of conceptual dialogue. Technology meant that their individualism could be maintained in the pursuit of a visual method of gathering and recollecting ideas (see Chapter 2, p. 42 and Chapter 9, p. 264). Exploration was considered constant and at times extremely detailed, leaping to another point of reference as flowed thought. The browser is the point of reference to map a search and capture this exploration through any technology available. As described by several artists, 'spark moments' occurred which gave insight to ideas and concepts. The artists used a range of technology and mobile devices to capture this 'spark seeing', to make it logical, to gain clarity, to put it in a place of reference for later.

The younger ND groups were extremely organised with filing systems that sourced information very quickly through technology and paper-based methods. These organisational systems allowed them to analyse on a constant basis bringing both theory and practice together. These logical research methods meant they had a step-by-step approach to sourcing information to support their practice. Writing and reading underpinned their methods of analysis; reading and sourcing text-based information via technology was a constant activity. For all the artists technology was integral to their organisation and thinking. The D artists tended to place much more emphasis on these tools as part of the thinking process.

Creative Production

The D artists talked about physicality in order to make tangible the creative process to production. The younger D groups tended to be more passionate about truth to the creative process. All the older groups talked about trust and being true to themselves. The ND older female group also talked about trusting oneself and trusting creativity. The younger female D group was particularly outward facing, they used social media and wanted to adapt and be part of mainstream life. For the D groups, the audience responses would make the work tangible. Often production was about an investigation into multi-dimensional ways of seeing, for example, time-lapse methods and a wide range of media. The dyslexic case study artists talked about time and movement within a visually spatial context. Movement contained within time became a fascination, for example; time-lapse images and unraveled scenes. Several artists talked about capturing the moment for recall; time could be relative with no past, present or future. The tangible nature of their production would however root their thinking in one zone of the 'here and now'. The production of a piece of work had to be physically finished to be tangible: 'tangible existence'.

For the ND groups, audience participation and their responses were part of the creative practice. To share the work with others was important and part of the creative thinking process. If the work drew a response it existed for other people. The work would then go onto another stage of development or be finished. The finishing of a piece could be about stages of a process or audience response and interaction. If the audience had a memory of the work then it had succeeded. Hence installation work tended to be about audience participation. To be able to capture memories of the creative experience was essential. The ND groups would utilise text-based materials much more to source ideas for production. They would often talk about theoretical perspectives; they were much more research-driven within an information-based framework for their practice. This information search would be continuous throughout the process of their production. Production of work was often about logical and scheduled processes. The young D female group was

similar in approach. In the main, the D artists tended to like the immediacy of not analysing too much. For all artists the audience response and feedback would add to the creative experience. In terms of tangible and non-tangible qualities of practice thinking, the research showed there were differences between the ND and D artists in thinking and approach to life, exploration of production and the way production was approached. The ND artists would express the desire to work in a variety of dimensions yet tended to work in categorised stages within 2D and 3D medium (see pp. 213- 214 and Appendix H, p. 316).

Thinking approaches and interpreting ideas

An interesting contrast was around the use of media and approach to the work (see pp. 210-214). The D groups tended to view their thinking to production as part of themselves within the environment, a holistic approach to thinking and interpreting ideas into production. Reflection and life experiences became more important with all older groups of artists.

The ND groups, particularly the younger groups, captured thinking through writing methods. Free writing would get immediate thoughts down; they talked about 'raw thinking'. All of the ND groups referred to writing as a way to 'free up the mind', to get thinking 'flowing'. Timelines were referred to as enabling a train of thought: 'mental drawers to categorise thinking'. The intellectual process was considered a set of stages. Thus the ND artists had a more process-sequential approach to their thinking to production and to drawing ability.

An element of the findings, drawn from the D artists' discourse, was the wish to have systems in place to capture and keep information from where ideas emerged and intuitive thinking flowed. From this came the emergent concept of 'flowed visual cognition' discussed during the semi-structured interview process (Stage three) as an ability to conceptually understand ways of conveying meanings; intuitive thinking underpinned by a structure that gives a safety net 'a point of reference' for tangential thinking to travel and flow to the next point of reference.

8.4 Stage three comparative analyses

8.4.1 Overview and position of the artists

The survey and the transcripts of semi-structured interviews showed that the terminology of D and ND visual artists was similar in describing their thinking approaches to production. The terminology used was drawn from their training experienced in arts education and was an example of precision of thinking within this language. However by the third stage of the ten semi-structured interviews the investigation showed that there were differences between the two groups in thinking approach to production, differences of experience about where they were placed in society, approach to collaboration, audience participation and in exploration and types of production. At stage three, the transcriptions were interpreted via open coding and then transferred to a template where axial coding collected and mapped the data. The open coding identified themes and the axial coding identified meanings and connecting links.

Dyslexic culture

The D artists tended to think of the audience as the viewers, whereas the ND artists often talked about the audience as part of the artifact or installation.

The D artists had an intense relationship with the written word. The research revealed how important trust was to the artists' identities and their relationships. As the written word had not, at first, been trusted many of the artists had developed very personal relations with the written word. These intense relationships manifested in a variety of ways. As the letter symbols could mean anything, letters and words would be conceptualised in an abstract, semiotic and symbolic way. The written word became a tool to structure work. Novels, poetry and writing were now part of their creative repertoire with words, sounds and shapes of words, patterns of meanings and transformation of meanings having a particular fascination. For three of the D artists, this relationship was about making the written word tangible, whether through the management of text, the emotional connection or the conceptual idea. All the artists were engaged in a series of challenges with their work.

They needed to work in a solitary way to gain clarity with a wide range of visual metaphors and mediums. To the artists, letters and words were not just 2D; they move, they were solid, flexible, they had colour and in some cases sound. This was about a very personal relationship drawn from an often-incomprehensible place. Survival came up in terms of existing and knowing who and what we are; the human condition. This was particular to the dyslexic group when they would refer to childhood experiences. Family relationships were important to the D artists, however this was not a driver within their life values. Their life experiences had formed these values.

Non-dyslexic artists' experiences

Relationships were influential, both within personal life and with the audience. This provided emotional grounding for the artists to navigate their creative world. These relationships also informed how they saw the world.

All the artists referenced theoretical influences, researched their influences in a rigorous way and were keenly aware of the creative terrain they were operating in. Anarchic practice was considered to be one that did not conform to the usual curatorial practices or the collecting of art culture. The artwork did not have to be tangible on completion. The work did not have to exist once the job was done.

8.4.2 Approach to production

Dyslexic creative production

Production made thinking tangible. Space and time was part of production hence space and time was part of thinking. The artists, throughout the stages of this research, often said they felt disconnected. Their experience of time would often be blurred; time could be relative with no past, present or future. The tangible nature of their production would however root their thinking in one zone of the 'here and now'. The production of a piece of work had to be finished to be tangible. This existence was linked to trust as a core part of the practice.

Collaboration in production was experienced in the two research exhibitions and further investigated at the semi-structured interview stage. The audience had far less engagement in the production of work as part of the story. This only started to happen in the second research exhibition 'Ways of Thinking 2' when time-lapse film captured the exhibition audience responses to the work. They were still the viewer and not part of the performance nor the changes to the piece of work. Later in stage three of the research artist D1 talked about working with people as part of the 'happening' of production. This was through making happening art in public places to observe how passersby might become involved. The work became tangible by the contribution of these people.

Non-Dyslexic creative production

Reading and writing as a way to research ideas toward project work was a main method for the ND artists. Writing took many forms; this could be mind-maps, note taking or longer narratives. For many it was use of key words as a tool to keep focused on the meaning or the key elements of the investigation. This group tended to be more researched-based and concerned about theory to underpin thinking and production. For all these artists the approach to the research was in stages as a planned and logical approach to making connections for ideas. For some it was through a premeditated approach to tuning into the environment, for others a process of sourcing information in stages of translation. This process would use technology, sketchpads, note books.

For all the artists the process of thinking to production was systematic and logical. For example, for one fine artist it was a logical process of making sense of the world through geometric shapes. All groups approached their production with a methodical, theoretical and analytical mindset. Reading up on the background topics to a concept was critical for many of the artists. This reading would include a very wide range of topics.

All the ND artists recognised their connections with the environment; this was a source of ideas (see p. 212 and p. 214). Their creative practice was developed through testing reaction to their work and reflecting on response. The iterative and active dialogue with the audience and their surroundings made production more tangible. For the ND artists this planned process was as academic research and part of the final finished production. The truth of the work was part of this process with the audience.

To share the work with others was part of the creative thinking process. When the work drew a response then it existed to other people. The work would then go on to another stage of development or be finished. For new work the artists would often present ideas to others to enable triggers to thinking. The finishing of a piece could be about stages of a process or audience response and interaction. Hence installation work was about audience participation. To be able to capture memories of the creative experience was essential.

Other artists could only see the work when presented to the audience. Many artists found this process stressful and they would test elements of the work on a range of audiences to measure the impact before final showing. For some artists there was no final showing as the work was part of the environment and audience response; it was therefore ongoing until the work had no tangible evidence of existence. The question then was 'how do I try to capture this for tangible existence?'

8.4.3 Strategies in thinking

Dyslexic thinking

Interestingly many of the analogies and metaphors the D artists described involved words in poetry. Writing was often expanded on with visual metaphors. Patterns of words were often a source of fascination; the patterns of the sounds, the shapes interlinking with other shapes. This helped some of the artists to write and think. It was not 'scary' anymore. Words and letters were manifested multi-dimensionally and placed in a multi-faceted situation.

Words could be visually walked around as 3D form, they could connect in time, make sound and movement in patterns (not sentences) as a multi-dimensional experience of thought.

Each artist had a different colour for the way they visualised these words or letters. Text had become stylised and removed to another contextual situation, letters were now part of an abstract visual concept, symbols of other meanings even moving into dreams. Letters and words were now iconic in that they had become a common means of communication for the artist without requiring prior explicit translation. Structure was important as a place from which to start, as often the artists' thinking would go off in many directions searching for 'gem' ideas.

As described by several artists 'spark moments' happened all the time - the insight moment. For the purposes of this research this is described as 'spark seeing' (see Glossary, p. 295). The artists used a range of technologies and mobile devices to capture this 'spark seeing', to make it logical, to gain clarity, to put it in a place of reference for later. The overriding concern is whether this is good thinking? and I must not lose this moment of realisation. They would take risks working at a faster pace. Often this was due to the concern they might lose the momentum, the concept, the spark-seeing moment. Visualisation systems were the main way of putting in place this order, with multiple visual lists to make it real. When this logical application to thinking became more intense the artists would refer to versions and stages. Stages could be manifested in several ways. In the exhibition 'Ways of Thinking 2' this had been shown through time-lapsed film, which evidenced the passage of time. One D artist was constantly shooting film and photographs to capture the moment.

Visualisation was used as part of the strategy for analysis. Some of the artists would set up structures for their visualisation methods, for example, the visualization of gradients of colour and hues to evaluate ideas and concepts.

Mathematical precision would be used for: versions of a typeface; individual ratings, and percentage gradients; the breaking down of factors; creating a hierarchy. Mathematical formulae were used to 'make it real' - mathematical measurement would mean a shape was realized. However the artists did say that analytical thinking could get too detailed. If an artist over analysed their work they would not make anything. The interesting construct was the need to have structure for focus, yet intuitive flowed thinking was recognized as essential to creative energy. Behind the lists and logical order, intuitive thinking, moving around this order, was bubbling away. In the main, most of the D artists considered they would think intuitively to come up with innovative ideas. They felt they knew when something was intrinsically right. The systems were there to place and file ideas. This meant much control of thought and emotion for the artists.

From this came the concept of 'flowed visual cognition' (see Glossary, p. 296). Intuitive thinking is underpinned by a structure that gives a safety net 'a point of reference' for divergent tangential thinking to travel from and flow to the next point of reference. The artists would express surprise to discover that this way of thinking was inherent. The questioning unraveled their thinking. The artists consistently referred to the point of reference. The point was needed to keep a focus that could be returned to. Metaphors were used to explain the point of reference for investigation; *'the point of a compass'* and *'a splinter that makes you feel something has been there'*.

A complex map of connections would emerge from the visual points of reference. Exploration was integral to creative production and was a necessity for the D artists. The semi-structured interviews involved intense discussions about the essence and nature of the exploration. This was about not being constrained. Systems, particularly within education, had constrained thinking and ideas; their creative practice is a personal journey that is intense and meaningful to identity.

Exploration was constant, at times extremely detailed and analytical but then leaping to another point of reference as flowed thought. The complex mapping of connections was often navigated via technology:

‘Going back at least 5 tabs it stores and saves information. I want to get that image so it stays in my head’.

The thinking point was about maintaining clarity to be able to go back to the original connection: ‘Where have I come from? I only know when I get there’. To get further away from the thinking point meant ideas could be far away from each other, then another element needed to be introduced. The expansions would make a solid triangle of interconnected ideas. Points of reference contracted and expanded as flowed thought. Many of the artists visualised conceptually in colour.

Flowed Visual Cognition

The artists would engage with tangential thinking, which integrated a range of ways experiencing their surroundings or world. Dreams were important (see p. 215). One D artist talked about her ability to range around searching in her dreams. Several other artists, from the fieldwork, referred to dreams as a way of gathering and interpreting visual information. Dreams were revisited and reawakened. This was where movement, colour, sound, shape, line, points of reference and space would merge together in relative time (4D). This was where images would manifest and integrate. ‘Waking up to a theme’ in a dream meant a new way of seeing. Dreams were where the artists would experience layers of meaning in a multi-faceted place. Ideas would spin off each other, popping in and out of thinking. Images were seen and moved around. Most of the artists talked about the ability to move around images from their mind’s ‘thinking point’. One artist talked about his ‘third eye’.

The final interview question asked; ‘When you walk away from this interview how will you visualise this experience?’ The D group responses were: thinking that got faster and faster, forming a flowed continuum; the impact of thinking

that was experienced as internal; physical with intense rushes of emotion; spatial zones that thinking moved into with a memory of the link that was real (see p. 216). Emotions, physical energy and visualisation were referred to as part of the response (see p.190).

Non-Dyslexic thinking approaches

All the ND artists had developed strategies, underpinned by logic and aiming to have more emphasis on tangential thinking to enable flowed thought. For one artist this was through a system of symbols, for another it was reflection on recent work to check and recheck visual cues. Logical meaning was important to make sense of the artistic development. Testing of creative practice was a way of ensuring that thinking was planned and had meaning. Because this approach operated at a variety of levels, rather than as a continuum of flowed thought, the artists tended to compartmentalise thought processes in a methodical fashion, to be tested at planned stages of practice.

The ND artists, and in particular ND1, ND3, ND4, talked about visualising concepts and ideas as stills (see p. 203 and p. 213). For example ND3 was keenly aware of her whole environment yet explained that she interpreted her ideas in a linear and 'regimented way' (her words). When asked how they made connections for thinking and how they visualised thoughts, all the artists responded that this was in 2D and 3D. One artist could not see how 2D and 3D would integrate together, with 2D linked to sequences and 3D linked to movement (see p.194). Visualisation was done through a set of components to order thinking, for example, the use of data and compartments to store information. In essence this was thinking data to be stored away (see p. 193). For another ND artist, 2D was without sound or moving image. He could see the value of other ways of working and sourced material from a range of other media but said he was fixed within 2D. He could not remember or visualise a series of moving images, however sounds and feelings were interconnected.

Each artist had a logical pattern of thinking. When asked how they visualised these patterns, three of the artists talked about spiral thinking or diagrams.

These patterns became confused, 'a huge confused web' with too much going on or spiraling out of control. For the ND artists this had to be controlled, to be tightened up and placed in a staged process of thinking. The webs became logical and sequential. For one artist this spiraling meant she curbed this thinking as she felt she needed to concentrate on what she was doing at that time (see p. 201). However, when asked at interview, the artists could visualise a pattern of networks as a way of remembering and thinking. For some this had been a spiral to be curbed for focusing purposes. For others this was as something linear, ever expanding. The visualisation of this pattern was as radial patterns that had a starting point and expanded to an end. This was discussed as linear thinking. Although often linear in thinking; the radial/spiral patterns did include 2D and 3D visualisation. Several of the artists said they felt they were in a transition period that now investigated time and spatial concepts.

One ND artist was asked to visualise the piece she was working on; how did she experience this? She remembered in stills of pictures; she did record moving images in her mind yet when she remembered this record it was in 2D. The D artists talked about movement and changes in shapes and viewing a filmic memory. The ND artists talked about a sequential set of stills, a single image and referred to a series of pictures that were in 2D.

8.4.4 Statistical analysis

Prior to the semi-structured interviews, the survey had shown a contrast in approaches to production between the D artists and ND; 82% of dyslexic artists tended to be lateral thinkers compared to 54% of the ND artists, 70% of the D artists worked across media compared to 18% of non-dyslexic artists, with 46% of ND artists working in 2 dimensions as main area of work (see pp.158-159).

Following the survey a Likert scale was introduced to the survey questionnaire for the 10 interviewees and revealed that visualisation tended have a different meaning for ND and D artists. The D artists responses were consistently

higher than the ND artists for 'always' and 'mostly' (see pp. 162-165) while the ND artists had a wider and more even spread of responses across all areas of discussion. The Likert scale measured attitudinal weighting of the significance of concepts, values and ideas. These included the value of creativity, the development of ideas, the way of acquiring information and influences, the value of interpreting ideas (see Keys 6, 7, 8, pp. 240-241). The purpose was to provide qualitative values to the data in order to compare findings. See keys 1-5 in pp. 165-170 for comparative analysis of the survey questions.

Throughout the Likert scaled sections, the D artists' attitudinal responses were consistently clustered in the 'always' scale showing a tendency for consistent position of views, whereas. For the ND artists there was more spread across the scales with more adaptation of responses. For example, for the significance of and value of creativity, 66% D artists considered creativity to be important to their production whilst 34% ND artists considered this to be the case. The ND artists had an even weighting across the scales showing a consideration that creativity was key to production in a range of situations and times. The same pattern tended to happen for the other sections with a weighting of attitude in the 'always scale' for the D artists at 23% compared to 9% for the ND artists for information to develop ideas and 31% for the D artists and 0% for the ND artists for acquiring information and influences. This comparison of spread of attitudinal weighting is shown in Key 8, (see p. 241). As regards the question around 'attitudes to interpreting ideas, strategies for thinking and significance on creativity' this was in the range of 53% to 66% whereas for the ND artists it was from 24% to 34%.

Key 9 (see p. 242) gives an outline of the number and types of statements each group attributed to a scale. For interpreting ideas, the statements in general showed an emphasis on multi-dimensional interpretations for the D artists while for the ND artists there was an emphasis on research in a range of ways through the internet, books and visits. For strategies in thinking there was for the D artists an emphasis on fluidity of thinking and the intuitive approach to problem solving, while for the ND artists there was an emphasis

on the process of thinking through methods and components. In Section 4 'views on creativity' the D artists demonstrated curiosity, persistence and seeking to question whilst the ND artists discussed theory, research and questioning. In Section 5 'the approach to creative production' the D artists again expressed a fluidity of approach ranging from obsessive through to drifting off and going dormant, whereas the ND artists would search for and collect detailed information.

Key 6: Attitudinal weighting of the value and significance of creativity

	Always	Mostly	Quite Often	Sometimes
Dyslexic	66%	21%	13%	
Non-Dyslexic	34%	36%	20%	10%

Key 7: Section 2 Attitudinal weighting of the value and significance of gathering information to develop ideas

Dyslexic

	Always	Mostly	Quite Often	Sometimes	Least
Q1	23%	16%	5%		

Non-Dyslexic

Q1	9%	6%	11%	6%	2%
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Key 7: Section 5 Attitudinal weighting of the value and significance a preferred way of acquiring information and influences

Dyslexic

	Always	Mostly	Quite Often	Sometimes	Least
Q3	31%	13%	8%		

Non-Dyslexic

Q3		33%	20%		
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For all the survey sections the D artists placed a greater attitudinal weighting towards 'always', whereas, for the ND artists the highest responses were for 'always', 'mostly' and 'quite often'. The ND responses were spread out across the categories to include 'Least' whereas the D did not. There was less emphasis on 'sometimes' for the D artists, with 'sometimes' only featuring in two sections: 'Your approach to creative production' and 'Your strategies for Thinking'. The consistently highest scores for the ND artists were for 'mostly' scoring the highest in two sections with one section at 'sometimes' and one section at 'always'.

Key 8: Attitudinal weighting of the value and significance in all sections

Dyslexic artists

Section 2: What is the attitudinal value and significance of interpreting ideas?

	Always	Mostly	Quite Often	Sometimes	Least
Total	53%	38%	9%		

Section 3: What is the attitudinal value and significance of strategies for thinking

Total	53%	30%	16%	1%	
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Section 4: What is the attitudinal value and significance of views on creativity

Total	66%	21%	13%		
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Non-Dyslexic artists

Section 2: What is the attitudinal value and significance of interpreting ideas?

Total	24%	21%	23%	30%	2%
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Section 3: What is the attitudinal value and significance of strategies for thinking

Total	35%	25%	25%	15%	
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Section 4: What is the attitudinal value and significance of views on creativity?

Total	34%	36%	20%	10%	
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In Section 2, Ways of interpreting ideas, the ND artists scored 'sometimes' as the highest score, whereas the D artists responses were consistently higher than the ND artists for 'always and mostly', with 'Your Views on Creativity' being the highest at 66%.

In Section 5, in answer to the first question; 'Does your creative production involve working on several parts of your work at one time?', 82% of the D artists worked in a lateral way. The scaled responses reflected the numbers of times the artists agreed a significance of value to the statement made. These statements and the scale (%) of attitude are outlined in Key 4 (see p. 168) to show the intensity and type of responses; thus the question How? or What? in the survey is signposted to the scaled responses for the purpose of attitudinal value.

Key 9: Survey Likert scales linked to statements articulated in survey

Section 2: Ways of interpreting ideas (see Key 3. p. 167)

Scale: Dyslexic	%	Example statements
Always	53	<ul style="list-style-type: none"> - I am a scavenger and nothing is too trivial or too important to be a potential source of inspiration - Any and everywhere stealing ideas from history the news, living and dead artists, film, radio, the internet, students - I am constantly looking, listening and feeling the world I live in - Visual associations - I focus a lot of energy on the idea
Mostly	38	<ul style="list-style-type: none"> - I am turning to the internet more and more for sources of new imagery and I stay in touch and support my fellow artistic friends work. - On-going dialogue - Massive visual expansion - Making visual links for a connection
Quite Often	9	<ul style="list-style-type: none"> -Take photographs - A big idea can come over time
Sometimes		
Least		

Section 2: Ways of interpreting ideas

Scale: Non-Dyslexic	%	Example statements
Always	24	<ul style="list-style-type: none"> - Exploration and experimentation - I may take a story and translate it into art - Internet searches - I ask people, that's most important
Mostly	21	<ul style="list-style-type: none"> - Taking photographs. - My ideas give me a voice - Through research, thought and imagination
Quite Often	23	<ul style="list-style-type: none"> - I research on the internet, check out fan sites for designers where hidden gems have been uploaded that went slightly under the radar - I will put a quote or a piece of research stapled to my work to remember where the idea came from - Empirically from the world around me
Sometimes	30	<ul style="list-style-type: none"> - I watch television - Visit the library and look at books - I print off pages from the internet - Mind maps
Least	2	<ul style="list-style-type: none"> - I visit exhibitions and museums

Section 3: Strategies for thinking

Scale: Dyslexic	%	Example statements
Always	53	<ul style="list-style-type: none"> - I think dyslexia means that it is not safe to make assumptions. Things for me are constantly changing a word can change in a flash - Looking - I have a tried and trusted visual processes that I always use to develop ideas, it involves drawing, making lists and taking photographs - Thinking around problems - Ambiguity - Make it solid, persist when things get tricky
Mostly	30	<ul style="list-style-type: none"> - Exciting absorbing and like a self induced drugged state when it goes well there is nothing to beat it - I try not to analyse it too much because pinning things down too much lends itself to getting things too tight and restrictive - A hunger to bring the idea into the real world
Quite Often	16	<ul style="list-style-type: none"> - This gives me the energy to get the momentum to take the idea for the abstract - It has to be noticed all the time just in case its relevant.
Sometimes	1	<ul style="list-style-type: none"> - Drawing with pencils
Least		

Section 3: Strategies for thinking

Scale: Non-Dyslexic	%	Example statements
Always	35	<ul style="list-style-type: none"> - Just being out and about, experiencing nature and everyday life - Once all components are collected I will then methodically put together the piece working out all the methods in correct order of production - Manipulate digital photographs to construct complex drawings - Free writing
Mostly	25	<ul style="list-style-type: none"> - By finding interesting items on the internet and saving them to history - In intense spurts to provide energy for ideas
Quite Often	25	<ul style="list-style-type: none"> - To have a raw version of thoughts without glossy language that masks the original idea - I jot down what I am thinking
Sometimes	15	<ul style="list-style-type: none"> - Reading up on topics I feel strongly about to have an effect on the work I produce

Section 4: Your views on creativity

Scale: Dyslexic	%	Example statements
Always	66	<ul style="list-style-type: none"> - The ability to look and think in a playful manner to have an open mind and not too many preconceptions. - I want to develop my writing ability, however my dyslexia makes me the slowest writer in the world – technology helps a little towards this form of expression. - I see words as individual art pieces and I connect up the words I want to use to form my work – this is then expressed in my 3D work with shape and texture. - To question things and question oneself - Just living in a way that is receptive. There is so much amazing stuff out there - Curiosity of why, how, and how else, or how different or how better - Persistence
Mostly	21	<ul style="list-style-type: none"> - I make sculpture and write - Interest in others work and other mediums
Quite Often	13	<ul style="list-style-type: none"> - Practicing actual skills with the tools used - Checking what the industry is doing
Sometimes		

Section 4: Your views on creativity

Scale: Non-Dyslexic	%	Example statements
Always	34	<ul style="list-style-type: none"> - Using theory, books, talking, imagination - To push the boundaries of a particular medium - A vivid imagination - Scanning the environment
Mostly	36	<ul style="list-style-type: none"> - Being able to ask questions - Researching beforehand is crucial to my way of working - I work out how to realize it physically before commencing - Conducting a web search
Quite Often	20	<ul style="list-style-type: none"> - It is no longer about displays of skills - The work is informed by research
Sometimes	10	<ul style="list-style-type: none"> - I make autobiographical work related to my past
Least		

Section 5: Your approach to creative production Q2 and 3

Scale: Dyslexic	%	Example statements
Always	40	<ul style="list-style-type: none"> - If you mean by your question do I make things in bits and then put them all together that is also true most of the time - There are many themes on the go however sometimes I become intensely fascinated with one idea until it or me is exhausted - I get a bit obsessive with the parts I really like and I neglect the uninteresting stuff - I am happy to drift for making in the physical sense
Mostly	31	<ul style="list-style-type: none"> - I just plod on with the themes and obsessions that have occupied my attention - I always talk to people about how they get their ideas - I prefer to look forward
Quite Often	16	<ul style="list-style-type: none"> - I go dormant for a bit and then re-emerge, whether I am improving or not is hard to tell. - Start with initial drawings
Sometimes	13	<ul style="list-style-type: none"> - And while creating my final pieces of artwork I will return to my sketchbook to draw ideas and develop old ideas that were before unused - I never really think I have to improve my practice. It is what it is
Least		

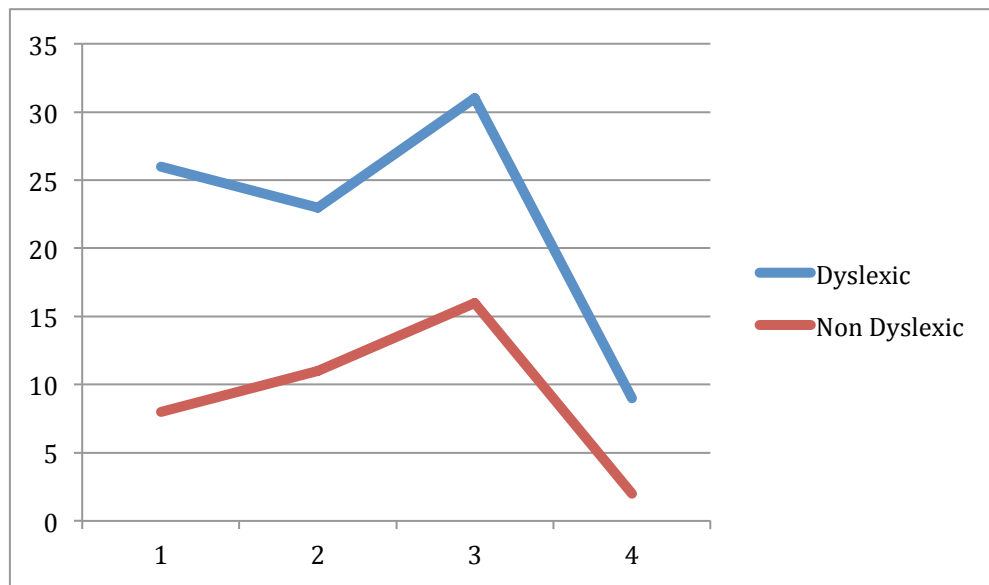
Section 5: Your approach to creative production Q.2 and 3

Scale: Non-Dyslexic	%	Example statements
Always	13	- Take notes of my work and have detailed logs - Asking other people
Mostly	46	- Empirically by being in places of interest and observing - Reading- physically and virtually - I feel distressed if I don't have enough time to myself - Learning to acknowledge mistakes
Quite Often	33	- I go back and forth between various elements until some sort of sense of completion - Use of discussions - Looking at the internet
Sometimes	8	- Looking at other designers
Least		

To find out where the ND and D artists might converge in attitude, a set of line charts were designed. Key 10 charts the convergence of responses (see p. 247). The charts show the different levels of response. In the main both groups of artists would converge in attitude between 'mostly and quite often' evidencing a difference of attitudinal significance and value across all the research discussions. A possible reason might be that the researcher is dyslexic and that dyslexic thinking devised the research questions. The research areas of investigation are part of an embedded life for the D artists. For example the visual arts is a place dyslexic people will collect as discussed in the Introduction to this research.

In the main, the responses across all the sections, revealed that the D artists emphasised fluidity and flow of thinking linked to visual associations while the ND artists emphasised the process of methods applied whereby thinking could happen; for example step-by-step components for gathering information. This process was useful as the charts visually show the differences in attitudinal response for each section with D and ND attitudes converging at 'mostly or quite often'.

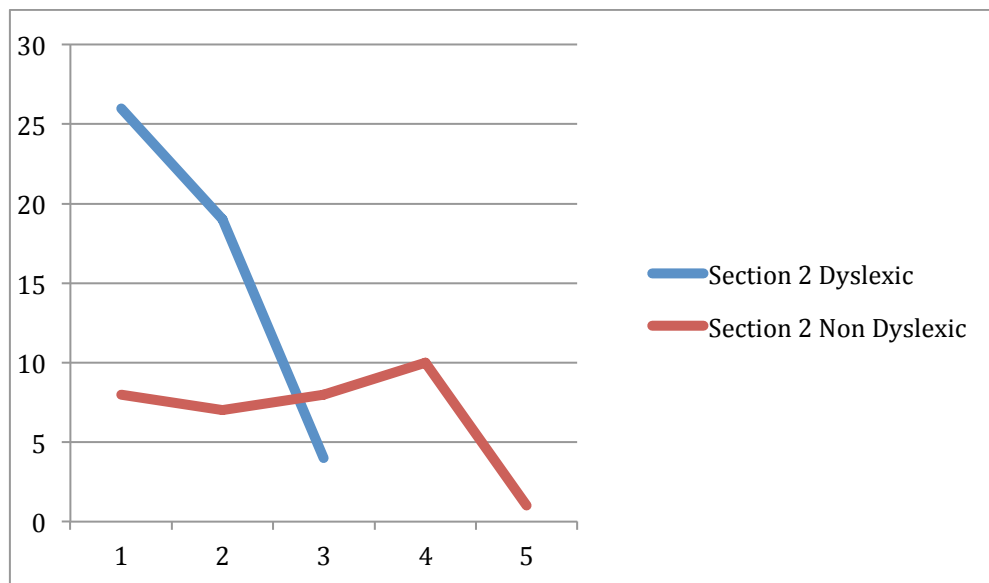
Key 10: The scaled responses for Always in each section



Sections for themed questions

Non-dyslexic artists scored at the lower scale for all sections.

Section 2 - Ways of Interpreting Ideas

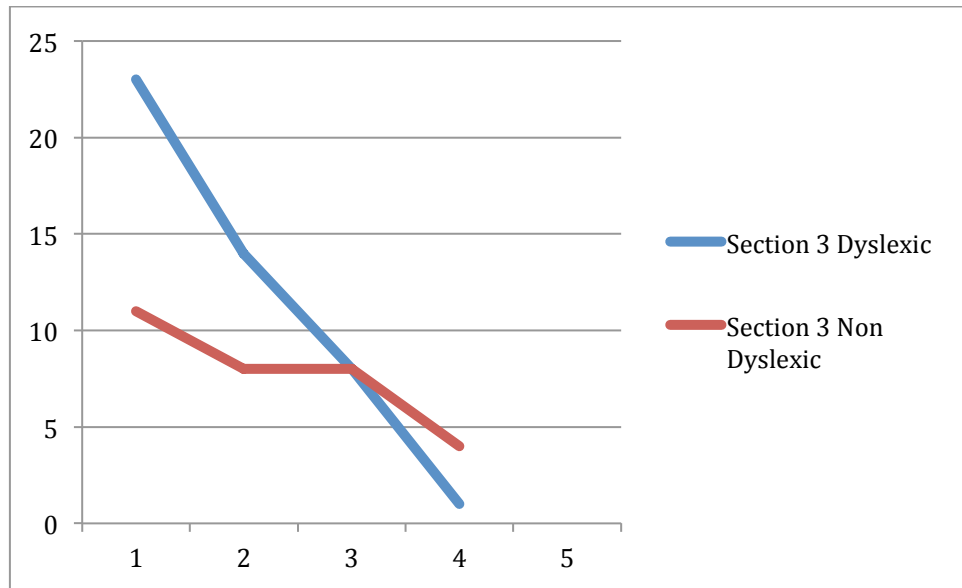


1: Always 2: Mostly 3: Quite Often 4: Sometimes 5: Least

Point of intersection 7- Quite Often

Intersection point illustrates a convergence of views and responses.

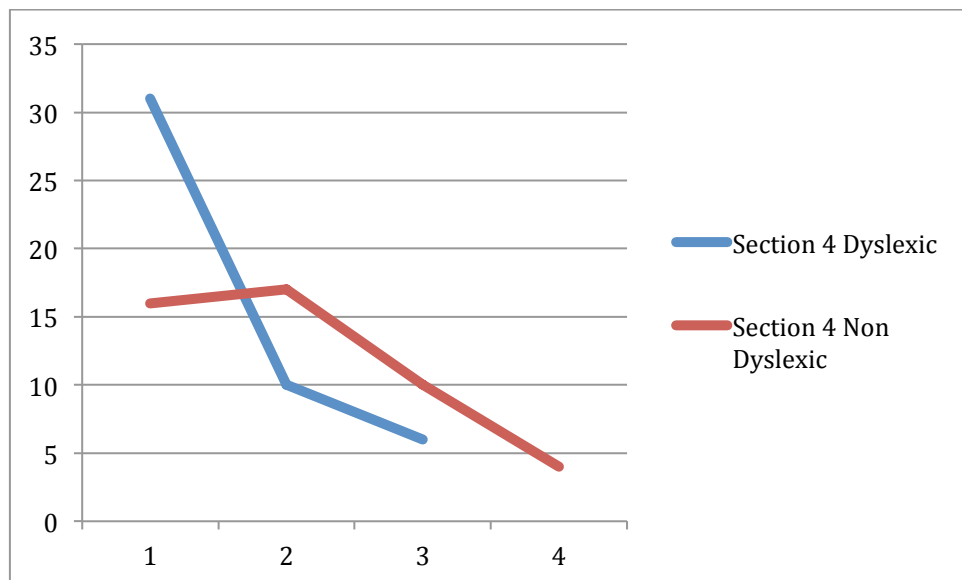
Section 3 - Your strategies for thinking



1: Always 2: Mostly 3: Quite Often 4: Sometimes 5: Least

Point of intersection: 7- Quite Often

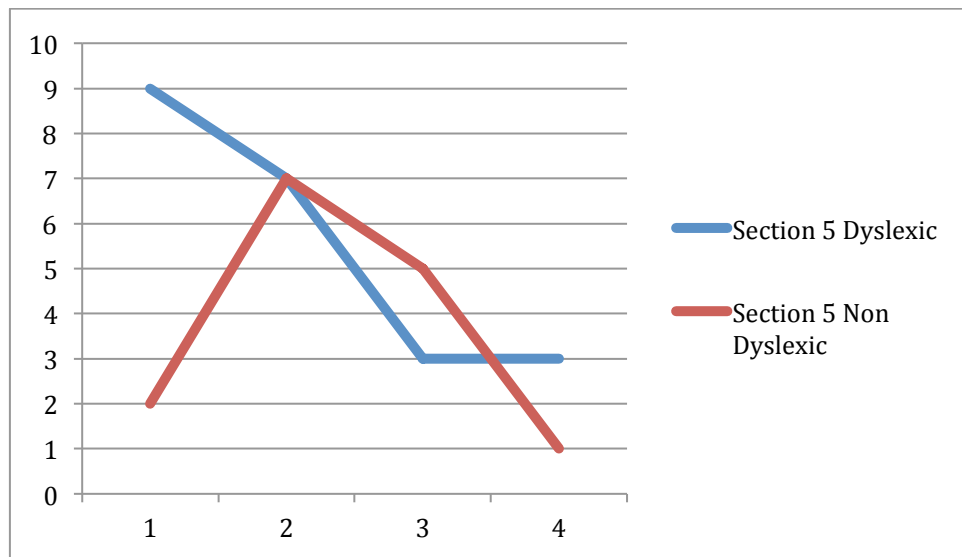
Section 4 - Your views on creativity



1: Always 2: Mostly 3: Quite Often 4: Sometimes 5: Least

Point of intersection 16 - Mostly

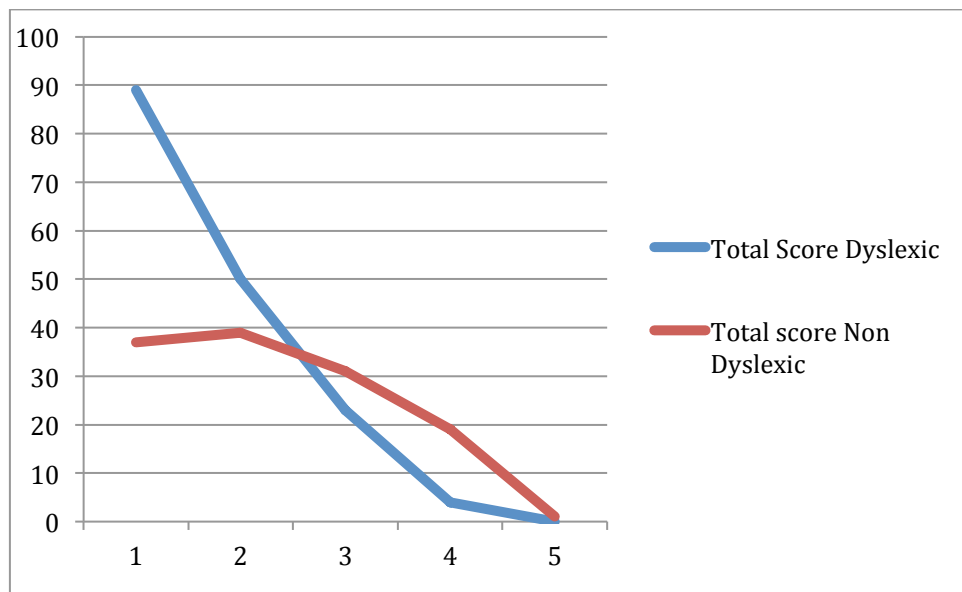
Section 5 – Your approach to creative production



1: Always 2: Mostly 3: Quite Often 4: Sometimes 5: Least

Point of intersection 7 - Mostly

Total score for all sections



Sections: 1: Always 2: Mostly 3: Quite Often 4: Sometimes 5: Least

Point of intersection 35 at Mostly / Quite Often

8.5 Concluding comments

At stage one, the second set of interviews explored the artists' thinking approach to production and how they were positioned in their practice. The discussions revealed a richness of strategies regarding their ways of thinking. The use of emotion to create change and interpret their responses to their immediate environment showed a strong understanding of tangible and non-tangible connections. These interviews showed that artists could integrate their inner and outer worlds, the inner world of their thinking and the outer world of influences drawn from their immediate environment. It was during these interviews that the distinctiveness of these artists' creative way of making meaning came into evidence. The concept of 'spark moments' was discussed, of journeys irrespective of length of time travelled, landmarks that had symbolic references and fixed marks that rendered layers of meaning.

At the survey second stage the elements constituting thinking to creative production were discussed. The data collection of the survey at stage two and the transcripts of the semi-structured interviews at stage three showed that the terminology of D and ND visual artists to describe their thinking approaches to production was similar. The terminology was drawn from the training experienced in arts education. However by the third stage of the semi-structured interviews, the rigour of the investigation showed that there were differences between the two groups in thinking approaches to production and differences of experience about where they were placed in society.

For all the groups, creative truth was important. All the groups were passionate about creative production. However, later in stage three of the research, evidence from the Likert scale showed that fluidity of thinking was part of the creative production and was more emphasised by the dyslexic groups. In the main the responses, across all the sections, showed that the D artists emphasised fluidity and flow of thinking linked to visual associations, while the ND artists emphasised the process of methods by which thinking could happen.

This statistical data corresponded with the qualitative data at the semi-structured interviews stage, where D artists' understanding of the 'here and now' elements of thinking linked to a conceptual understanding of flowed thinking. This revealed a conceptual thinking model of 'flowed visual cognition'.

The third set of interviews reflected on the change and flow of creative practice. The artists' recognition of their way of thinking had been discussed and reflected on so as to move forward to new ways of thinking to production. The interviews revealed a set of D artists who explored meaning all the time. They were restless in their inquiry about their creative practice. They showed the ability to think and work in a range of dimensions that included visualisation, movement, sound, space and time. Although all the D artists had talked about a sense of isolation, of being the outsider, they had collaborated with a tacit knowledge of the state of their practice, life experience and their dyslexia. Often the ND artists' work was based on rigorous research from which production emerged. From this linear process of research several of the ND artists found transition from 2D to 3D challengingly complex. They wanted the work to fit into a specific time and space context. As movement was not featured, images were still visualised as a series of stills. When asked if they could visualise walking round the interview or their own production they all found this complex and could visualise in short periods of movement or as stills of images. Short periods of filmic movement could capture emotional feelings at that time; not all of them had thought of this method of visualisation. Several of them considered they could do this now that this thinking had been discussed.

A comparison of the responses to the final question in section 5 and the first question in section 2 further evidenced ND reflection on the process of questions. In section 5; 'What is your preferred way of acquiring information and influences?' is comparable to the first question posed in the earlier section 2 of the survey 'How do you gather information to develop your ideas?' Interestingly the ND responses had changed substantially from a wide range of responses for the earlier question (Section 2) to higher percentage scales

of 63% for 'Mostly' and 37% for 'Quite Often' (Section 5). There had been much more prompting of the ND artists throughout the interviews whereas the D artists had tended to have a flow of discussion that made links all the time to experience, feelings and ideas. The final questioning of the interview focused on the artists' reflection of the interview experience. The D artists talked about movement and changes in shapes and the viewing of a filmic memory. The ND artists talked about a sequential set of stills, a single image and referred to a series of pictures that were in 2D. An interesting outcome of the empirical evidence was the use of terminology that included such terms as 'spark moments', 'outsiders', 'others', 'intuitive collaboration', 'multi-dimensional thinking' and the need to capture moments for ideas was termed as 'spark seeing moments'.

All groups of artists considered their creative production integral to who they were and their ways of thinking. However, the differences in creative production approach had also become clear at the semi-structured interviews, stage three. Several ND artists made their creative work become non-tangible and people were invited to be part of that work and become involved in the creative practice, whereas for the D artists the audience tended not to be part of the work or would they make changes to the piece of work. The socio-cultural position was that of the 'outsider' seeking to understand. They were the viewer viewing the work of the artist as a representation of his/her world thus making it tangible. The physicality of the production made it a 'tangible existence'.

As articulated by the participants in this research, multi-dimensional ability is to think at the same time in several dimensions to produce creative practice that is set within multi-faceted contexts. These contexts include the integration of the inner and outer worlds of these artists to produce creative work in a range of integrated media. The characteristics of which are the ability to map points of reference, the flexibility to adapt and change the flow of thinking through a range of dimensions at the same time and at different periods of time. This is articulated as a flow of thinking that continues constantly in

exploration with an ability to mark points of meaning to the whole concept. This thinking is termed 'flowed visual cognition', and as such expands and grows continuously.

The D artists all had experiences of isolation when growing up, however this isolation had made many of the artists into acute observers of life. This had often made them isolated thus making their relationships and communications with others more complex. Often these artists would talk about being thought 'strange'. They often felt they were operating with two sides of themselves, the internal creative side and the external side consistently making sense of the others. The ND artists tended not to talk about isolation as a main factor in the way they approached life. Family and friends were discussed as being either role models or influential on their outlook to life. There was, in general, a close bond and these contacts were referred to often in the interviews. Thus these artists viewed life as being part of something rather than as an outsider. There was greater emphasis on research and theory in the discussions with the ND artists. They were methodical in approach to practice, with set stages to production. Reading and writing were tools to glean information with meaning. Key words within texts were a starting point to gain a flow of ideas. For many of the D artists writing words had become obsessive; this was to do with overcoming a challenge and to then celebrate the conceptual meaning that words and letters could give to creativity.

For the ND artists a text-based approach, often research led, tended to give a heightened sense of awareness of the environment. This was not the case for the D artists who tended to have a more direct connection with their environment through immediate sensory visual responses. The D artists tended not to have a traditional approach to research and theory. They worked in a different way, scoping the territory visually, aurally and orally often sourced through technology. For several of the D artists, logic was important to the way they managed life. The D artists would place elements of information into categories or hierarchies to store and remember.

The artists acknowledged these versions of information, as a product of higher educational training; there was a more methodical approach to collecting information and a fascination with logic and detail. This fascination manifested itself in the way they worked with words and letters. Words had become symbols for overcoming the fear of text to then enjoy and immerse themselves in the pleasure of creative use.

8.6 The emergent research findings

At stage three the concept of dyslexic thinking and culture emerged. The previous section outlined and analysed the differences and similarities between the D and ND artists. Stage one had revealed themes around thinking patterns linked to timeframe and positioning ideas within spaces, the themes of tangible experience and the notion of the outsiders and collaboration. These themes were expanded on in the next stage when questions were framed around strategies for thinking, interpreting ideas, views on creativity and life experience. Stage three investigated these themes further to reveal phenomena of 'dyslexic culture and flowed visual thinking'.

Dyslexic Culture

The research revealed the D artists' approach to capturing the recall of experience. This tended to be through film, time lapse film and photography. This approach was also a way of making a record of their creative practice. They had developed an observational and often detached approach to their creative production. The audience had far less engagement in the production of work as part of the story. A common creative theme ran through both research exhibitions, that of an exploration of the human condition, through contextualisation, symbolism and iconography; a visual language to explore the human experience through a third eye. The D group would produce work to be tangible as the outside world was often problematic to them. The concept of a detachment and an observation, as outsiders, ran through all stages of the research. Finally, the D artists were aware of an intuitive way of collaborating amongst themselves.

Flowed Visual Cognition

The D group made connections that would move thinking to another tangent. Yet when they did apply logic it was in a very rigorous way to make sense of systems. Multi-dimensional thinking became a way to describe this pattern of thinking around visual shapes and spatial connections that moved and changed. The D artists had the filmic spatial ability to move around objects in their 'mind's eye'. For some this was referred to as 'my third eye'. One artist had discussed negative space as other ways of seeing imagery. These spatial ways of thinking were described in detail by some of the D artists referencing words and letters. Words and letters had become a source of fascination and would be visualised as moving objects to be walked around with colours and shapes changing.

Such was this thinking experience that several artists talked about the moment of understanding as being a light bulb moment or even feeling electrocuted. These artists thought and explored in a complex map of connections. The connections would be made up of points of reference such as: the thinking point; the point of understanding; point of meaning; metaphors or analogies, 'the light bulb moment'. Thinking did not travel too far away from the point of reference unless another point was found. These points were talked about as connecting ideas moving away from each other to then have another reference introduced.

Flowed visual thinking characteristics are defined as:

- Visual thinking points of reference
- Spark moments
- Flexibility to adapt and change to flow
- Multi-dimensional thinking
- Convergence of thinking points within continuous flow
- Reference points expanding in a continuum

The D artists described 'flowed visual cognition' as a collection of reference points ranging round in a continuum, starting small but growing and growing in thought. Everything became multi-dimensional in the artists' internal mind's eye. This thinking was described as formed of rushes going faster and faster. Colours were part of this experience and described as vibrating, emotional and absorbing. The D artists could integrate levels of thinking at the same time. This meant that they could not imagine others who did not have this ability. The D artists expressed surprise that others did not think in this way and that this was of any value. The socio-cultural contexts of this thinking are further discussed in Chapter 9.

Chapter 9: Socio-cultural context of flowed visual cognition

9.1 Introduction

The terms 'outsider' and 'others' emerged during the fieldwork and is one of the findings. The life experiences of the dyslexic artists are shown to be part of the shaping of their way of thinking, their creativity and their approach to relationships (see p. 49, citing Bruner and Vygotsky in Dorn, 1999, pp. 64-65).

These artists talked about themselves as the 'outsiders' and other non-dyslexic artists were the 'others'. They experienced a sense of isolation from the mainstream of society, being on the edges or boundaries. The findings show that there is a fundamental difference in thinking; hence an engagement with the 'other terrain' of life. The findings show a difference in thinking from dyslexic artist cognitive processes manifested as flowed and visual. The process of this thinking is continuous and therefore non-linear, chronological or sequential and therefore does not fit within categorised systems.

This chapter will discuss the mainstream terrain of education and the workplace in the context of the position of the dyslexic person. 'Mainstream is defined as being what society thinks you should be, and look like'. (Urban Dictionary, 2014) This section will further discuss how mainstream provision has sought to recognise the 'outsiders' and the results of this inclusive practice.

The final concluding section will discuss the findings of this research with a discussion on the inherent visual language ability that forms dyslexic culture. Finally the conclusion will discuss dyslexic multi-dimensional thinking that is flowed and visual. Chapter 9 gives a contextual discourse to this research by discussing dyslexic thinking within a socio-cultural perspective.

9.2 The Mainstream: the position of the dyslexic person

Whilst dyslexic people have tended to congregate within the arts they have also tended to congregate in marginalised groups if they do not find an outlet for their ways of thinking. It is startling to realise that up to 60% of people in prisons have reading ages comparable to being dyslexic (BDA 2012). This is further substantiated by the report 'Dyslexia Behind Bars' (2012) which found that overall, 53% of (2,029) prisoners at Chelmsford Prison during the project were diagnosed as having dyslexia, compared to 10% of the UK population.

The exact percentage of dyslexic people who are not in employment, education or training (NEET) is not known, however it is known that the possibility of being NEET is heightened by certain socio-economic characteristics such as: disability, being in care, disadvantaged background and lack of education. The report 'The EHRC Triennial Review Developing the Employment Evidence Base' (Policy Studies Institute, 2010) states that having a disability doubles the incidence of NEET status compared with those without a disability: 15% compared with 8 % of those who are not disabled (Policy Studies Institute, 2010). In 2013 the percentage of young people who were NEET was 14.9% (Office for National Statistics, 2013). In addition the terrain of education is increasingly complex with a raft of qualifications and different forms of delivery. Granted the age of compulsory educational participation was raised to 18 years old in 2015, but if the delivery is not appropriate to learning then the high percentage of NEET could remain.

Up to 2010 teaching and learning in secondary, post-16 education and HE had a drive towards more inclusive practice with the emphasis on widening participation, greater access to different assessment for different learning and a range of curricula designed for lifelong learners, vocational learning and flexible study. However testing has increased with more emphasis on fact-based exams and standard assessment tests (SATs) (see Glossary, p. 295). Now there is even more emphasis on exam-based testing and, with this, increased linear learning.

9.2.1 Mainstream education: seeking to recognise the outsider

In 1997 Helena Kennedy QC wrote *Learning Works* on behalf of the then Further Education Funding Council (FEFC) Widening Participation Committee, set up to widen access to Further Education. Professor John Tomlinson, a former Chief Inspector of Schools at Ofsted, was in position as Chair of the Committee for Learning Difficulties and produced the report on 'Inclusive Learning into the post school education of those with learning difficulties and/or disabilities, in England' (1996). This report urged educational sectors to recognise different learning as of equal value and pressed the government to fund resources for adults with dyslexia in mainstream education. This report was a major step forward in placing responsibility on educators to provide the appropriate learning for the learner, thus placing the dyslexic learner within a positive and not a deficit position within society. In *Learning Works*, (1997) Kennedy talked about inclusive education and the importance of this for society, economically, socially and culturally:

'Learning is central to economic success and social cohesion. As we approach the twenty-first century and the immense challenges of the global economy and unprecedented technological change, achieving these inseparable national goals will depend more and more on the knowledge, understanding and skills of the whole population'. (Kennedy, 1997, p. 15)

These reports and the existence of these committees demonstrated the importance of widening participation to the then Further Education Funding Council (FEFC). They wished to place growth at the heart of their funding methodology. In 1999 the QAA, working with Higher Education on Academic Standards, published a code of practice for students with disabilities. By 2000 the Higher Education Funding Council for England (HEFCE) had in place policies to widen, not just increase, participation. Disability student allowance (DSA) has further supported these dyslexic students once they achieve entry. Widening participation and the new legal duties of public sector organisations opened the doors to educational opportunity for dyslexic students.

However, Higher Education (HE) continues to value academic qualifications over and above vocational qualifications and employers are increasingly looking to a selective and elite grouping of universities. Kennedy discusses her vision for inclusive education during a period of time when this was also government vision (2000 – 2010):

‘Government has the key role in presenting the powerful vision of a learning nation. It means we must all see ourselves as in the picture, capable always of new learning’ (Kennedy, 1997, p. 7).

One inclusive educational goal was almost achieved when the Rose Report (2009) was presented to Ed Balls the then Secretary of State for Children, Schools and Families. The evidence of this independent report showed that teachers needed to be trained to implement high quality interventions in the classroom for children with literacy difficulties and dyslexia.

In the main the report ‘Identifying and Teaching Children and Young People with Dyslexia and Literacy Difficulties’ (Rose, 2009) was considered ground-breaking and called for effective personalised learning to meet individual needs, teacher training that included pedagogy in inclusive learning for dyslexic students, and specialist teachers in the classroom to identify those students who might be severely dyslexic. The report sought to ensure provision for dyslexic learners from primary school and secondary school (2009, pp. 9 - 28). For a long time dyslexic experts and organisations had noted that dyslexic learners were not being supported in pre-university education. By the time the student had reached HE they had developed coping strategies and had succeeded overcoming many of the barriers to learning. In addition, they were able to access Disability Student Allowance (DSA), which is an allowance not available across other educational sectors.

Underpinning the Rose recommendations was a strategy to ensure quality of provision and teaching with audits of school provision, assessment of learner progress, identification of any learning difficulties and teaching differentiated

according to learner ability. Many in the world of dyslexia - the British Dyslexic Association, the then Dyslexia Action, educational psychologists, specialist teachers and educationalists - welcomed the report as enlightening and enabling an inclusive education in the classroom. There were those who considered that the report was based on a deficit model of disability with no input from dyslexic expert representatives themselves, therefore continuing the negative label placed on dyslexia, defined by Rose as issues around literacy (Cooper, 2010, pp. 49 - 53). The point being, if this is about inclusive education why were the dyslexic experts not included to provide a different perspective?

The change in government in 2010, meant these recommendations were not taken forward. To address the gap in provision, in 2012 the Children and Families Bill laid the foundations for those with a learning difficulty to be in charge of their own budget for support. This meant that a person needed to understand the systems in place first before they could even start to secure the services that might support them. For example, many young people who have a specific learning difference (SpLD) and are NEET might not be aware of or know how to access this provision (see glossary p. 294). The provision is available for 0-25 year olds, with young people now able to ask for assessment. However if they, or an advocate, do not ask, the assessment will not happen, thereby potentially affecting their transition and progression in education or training. Local offers of services are delivered by the Local Authorities (LAs), yet to-date LA's do not have the resources or the knowledge to broker these care plans.

9.2.2 Mainstream workplace: recognising the outsider

In the paper 'Raising Expectations' (2007) the government wished to offer a fuller range of learning opportunities that would address the skills-needs for the workforce. Differences in learning styles were recognized as being of relevance to the context in which people could effectively develop their skills ability.

The issue was that there had been no rigorous testing of the appropriateness of this model to identify a learning style or styles. Back in 2005 the 14-19 White Paper had identified the need for an increased development of skills relevant to the workplace. Following this, the Leitch Report (2006) had identified the skills mix required for the UK to maximize economic growth. Both government papers, recognised that there was a danger of young people becoming NEET.

The 2007 government paper 'Raising Expectations' had taken this further with a new requirement for 17 year olds to stay on in education and training with increased employer input. The aspiration was for 90% participation in education and training among 17 year olds by 2015. This report emphasized apprenticeships and the newly introduced diplomas as routes of vocational learning to employment and education, thus as another way of assessing learning.

According to the Department for Education, Children and Young People (June 2013) 92% of 16 and 17 year olds received an offer of a place in education in 2012. Against a background of austerity and unemployment this data is presented as positive. However the Office for National Statistics (ONS) records have shown that for young people over 17 years old the percentage of young people who are NEET is 14.9% (Davies, 2014). Within this percentage it is not known what percentage of dyslexic people might be NEET.

In 2011 the Department of Business Innovation and Skills (BIS) published the paper 'Opening Doors, Breaking Barriers: A Strategy for Social Mobility'. This paper showed participation age was to be raised to 18 years providing over 60,000 extra learning places with funding to create more than 360,000 new apprenticeships at all ages by 2012. Reforms to higher education funding were to put new obligations on universities to improve access. In particular, those universities charging over £6,000 in student fees per annum would have to attract more students from less affluent backgrounds. In 2015 this fee increased to £9,000 per annum.

The summary of labour market statistics published on 12 June 2013 by the Office of National Statistics shows that from February to April 2013, compared with November 2012 to January 2013:

- There was a rise in the number of economically inactive people aged from 16 to 64.
- The 16 to 24 age group had the lowest employment rate at 50.9 per cent (42% of all people in this age group were in full-time education)

The fact that 42% of 16 - 24 year olds are in full time education shows that these people are staying on in education and training for as long as possible due to the lack of available work and in order to have a greater chance of gaining work following their course of study. For educational providers and students, assessment is an all-important means to gain recognised qualifications. Assessment can be based on the ability to condense a large quota of information within a short space of time, to then be tested within an environment that is not conducive to thinking for the dyslexic person.

A recent John Cass Business School report (2012) suggests that the divergent thinker often does not fit easily within this type of assessment practice. The world is now complex, where thinking is required at multiple levels thus testing and assessment should reflect this. This global environment is now constantly changing at an increasing speed therefore the economic benefit might be for changes to be made to testing and assessment to embrace the divergent thinker.

Researchers from the Sir John Cass School have produced a new piece of evidence that shows entrepreneurs with dyslexia hold the key to economic growth, they create more jobs and firms than non-dyslexics, yet a lack of expert support in mainstream education is costing the UK economy £1 billion per year. The report calls for investment to harness the talents of dyslexics for the growth of the UK (Halfpenny and Halfpenny, 2012).

The report 'A review on dyslexia and entrepreneurship and the case for investing in the sector' (2012) cited one in five entrepreneurs as dyslexic and this is of national significance. The report called for more government investment in specialist support for entrepreneurs to understand their strengths. This support to include mentoring and training, investment to create awareness and an understanding of dyslexia amongst business networks to enable them to assess systems of communication and make adjustments to their way of thinking. Yet our global communications and global businesses thrive and even require divergent thinking, as discussed in the following section.

9.3 Technology and global communications

What value is conceptual divergent thinking in our society? Internet cultural capital sources describe conceptual thinking as the ability to understand a situation or problem by identifying patterns or connections.

'Conceptual thinking can include the integration of issues and factors into a conceptual framework. It involves using experience, creativity, inductive reasoning, and intuitive processes that lead to potential solutions'
(psychology.wikia.com, 2014).

Manifestations of conceptual thinking can be: the use of common sense and past experiences to identify problems or situations; the recognition of differences between the now and then; the ability to apply and modify complex learned concepts or methods to identify links amongst complex data from unrelated areas. One of the findings of this research has been the recognition that technology is part of the day-to-day lives of dyslexic creative practitioners. Technology also enables multi-faceted conceptual thinking to be shared and developed and to challenge conceptual thinking in an integrated way that has not been possible before. From the 1990s the emergence of the internet and allied technology has grown apace to become the prevalent form of communication and by doing so we have increased the variety of visual images that surround us. Visual technologies are now a part of our lives and

central to the cultural construction of social life in global societies. As evidenced in chapters 7 and 8, the dyslexic artists utilise visual communications as an adopted language of exploration. This language can connect people to the world in visual terms and enable interpretation of how we think we see. This is a world where all people might navigate, in a considered way, through the ownership of their own visual language. Visual language has become important to our global communications.

Since 2000 technology has become more advanced and an integral part of learning, academic study and creative production. Technology has thereby added a dimension to learning that has given access to different ways of operating, conceptualising, thinking and seeing.

9.4 The outsider and flawed visual thinking: dyslexic value?

In 1936, the concept of the mass media was discussed by Walter Benjamin, in *The Work of Art in the Age of Mechanical Reproduction* (2008). Here he discussed the new role of technology as a means to alter the relationship of mass production to art. Benjamin was quick to understand the value of film as a means of perception from many different angles (see p. 42).

Film, photography, television, billboards, print are the twentieth century tools of distribution for the plethora of visual images and communications that surrounds us. Advances in technology, the emergence of the Internet, social media, mobile devices, 3D visuals have all added extra dimensions to communications. These ways of thinking and seeing tend to be embraced by the creative dyslexic. This is a terrain that some of the blue-chip companies are recognising as of real value to their businesses, for example, Virgin, AppleStore and Netflix. Coffield cites Desmedt et al in the 2004 research into the validity of learning styles models, *Should we be using learning styles?* Here he notes that the 'world of work is crying out for creative, rule-bending and original graduates who can think for themselves' (Desmedt et al cited in Coffield, 2004, p. 59).

Creative thinking can be articulated, shared and innovated through technology. Through technological innovation we view knowledge and the acquisition of knowledge (Gardner, 2006). Howard West calls for universities, corporations and organisations to adapt to some of the most gifted who have uneven abilities, particularly given 'new smart technology which enable gifted visual-spatial thinkers to work in a visual spatial language on fast powerful graphic-orientated computers, developing and effectively communicating their ideas in novel ways' (West, 1991, p. 43).

This research found that dyslexic visual artists have the ability to engage in flowed visual thinking. The technological revolution has meant that this thinking can be harnessed into the multiple connections that technology needs to be constantly developmental. The margins in which dyslexic people congregate still exist, e.g. prisons and the NEET group, however, global technology embraces visual thinking and entrepreneurship goes hand in hand with these emergent technologies.

The literature review and this chapter discuss educational provision which needs to be more inclusive of different thinking and thus to enable relevant ways of learning. Critical analysis and self-reflection have been the cornerstones of cognitive theoretical thinking and are some of the underpinning practices in teaching and learning, particularly within technology and arts education. In arts education, critical analysis has been the cornerstone and underpinning element of this system. Interestingly many dyslexics have tended to enter these areas of study, not because they are particularly talented but because this type of learning enables flowed creative thinking. Thus central to this debate is the value of dyslexic thinking to the mainstream and the value of arts education to enable this different thinking.

Chapter 10 Contribution and concluding comment

The characteristics of dyslexia have been a matter for discussion by experts in the field for many years. There have been areas of the dyslexic experience well researched such as the dyslexic experience in Higher Education (Pollak, 2005) and the approach to teaching dyslexia and different learning styles (Mortimore, 2004). Mortimore mentions the need for reliable empirical research to support the 'contention that dyslexia may frequently carry high talents in spatial, mechanical or visual skills' stating that too often emphasis is based on anecdotal evidence, citing West as relying on letters, diaries and lectures for evidence (Mortimore, 2004, pp. 80-81). In addition, she notes that there is no hard quantitative evidence in the field (2004, p. 29). David Grant's revised publication of *That's the Way I Think* notes that there is extensive research on creativity and dyslexia yet little on dyslexia and creative thinking (Grant, 2010, p. 106 and p. 39).

This anecdotal evidence has indicated the need for further investigation, and there has been some quantitative testing in this field. In 1999 Beveley Steffert conducted research using scientific brain scanning methods on 360 art students (Steffert, 1999 revised publication 2009). She concluded that the dyslexic student brain had developed differently to non-dyslexic students (Westwood, 2017). Jane Graves when teaching at St Martins noticed how fashion students had the ability to move around objects within their minds (see p. 37 of this thesis). However there has been little rigorous qualitative testing for dyslexic visual cognitive ability and none that sets this investigation within a socio-cultural framework.

This qualitative research, using mixed methods, has set out to investigate the nature of visual dyslexic cognition by testing the cognitive differences between dyslexic and non-dyslexic artists. This approach to qualitative methods allows for a richness of data for final analysis. The research has systematically investigated such thinking process both on their own and comparatively. Hence the research questions and aims (see pp. 10 -11) were designed to

shape the empirical investigation and contribute to this gap in knowledge. Thus the research questions and aims are the framework of this research and have been addressed throughout the chapters of this thesis to lead to the findings. This chapter will outline those findings as a contribution to the gap in knowledge, to finally make concluding comments on the benefits to education and learning.

The main research findings are 1) the dyslexic capacity for non-linear flowed visual cognition within a multi-dimensional conceptual framework 2) this ability is so taken for granted that the dyslexic artists did not consider this to be different or of any greater value, 3) the finding that dyslexic artists can have certain cognitive strategies, which may be underdeveloped in non-dyslexic artists yet these cognitive strategies can be taught to non-dyslexics. Finally, the research draws conclusions from these findings by further discussing the benefit of this thinking to education, the workplace and to a technological and increasingly entrepreneurial society where divergent thinking contributes to creative production.

The research argues that dyslexic flowed visual cognition demonstrates creative thinking that is underpinned by the commonalities of creativity as reviewed and outlined the literature review of this research (see p. 35). This research recognises that creativity can reside with many however it is the dyslexic capacity for visual cognition that this research investigates. David Grant notes that many dyslexic artists can think visually, but that is due to the barriers faced during life experiences (Grant, 2010, pp. 106-120). Steffert, for her part, states the dyslexic brain is wired differently (Westwood, 2017). The research suggests that flowed visual cognition is intrinsically utilised by the dyslexic artists in the creative process. In addition, the research evidenced a dyslexic cognitive culture positioned within the dynamic of the 'outsider'. The research revealed some of the characteristics of dyslexic culture, including the way the dyslexic artists, conducted their daily living.

This impacted on:

- The way they conduct their explorations of creative practice
- The way they collaborated in creative practice
- The way the audience was viewed
- The tangibility of creative practice
- The way inner and outer environments were cognitively integrated.

10.1 Key finding: dyslexic capacity of flowed visual cognition

The fieldwork provided evidence that dyslexic thinking is different and therefore could offer education, training and the workplace with different ways of working, new skills and abilities. All the dyslexic artists demonstrated flexible, adaptable approaches to practice. These artists' approach to conceptual thinking is in a flowed way that can integrate ideas and processes at one time. This is multi-layered and dimensional and is articulated by the artists as flowed thinking to include visualisation, movement, sound, time and space. Accordingly the artists worked across a wide range of media (see p. 168 and pp. 180-185).

During the semi-structured interviews the D artists described a starting point in time and the mapping of references. For the D artists it was important to scope concepts, analogies and metaphors. Rather than a linear motion this thinking diverged from a 'thinking point' and flowed in a continuous motion to converge with other thinking points for linked meaning. Several artists described this flowed thinking as limitless; gathering speed until converging at another point of thinking.

The D artists tended to be situated within a multi-faceted context, as part of their creative practice (see p.159 and p. 180), whereas the ND artists tended to observe, taking each stage at a time for their thinking to production (see pp. 211- 214). Both groups had patterns of creative thinking. For the ND artists these patterns would expand and stop at an end point. For the D artists the patterns connected tended to have more associations with symbolic meanings.

The D artists talked about multi-dimensional thinking that is ever changing according to the flow of thought (see pp. 255-256).

Flowed visual cognition characteristics work in conjunction with each other and are defined as:

- Visual thinking points of reference
- Spark moments
- Flexibility to adapt and change to flow
- Multi-dimensional thinking
- Convergence of thinking points within continuous flow
- Reference points expanding in a continuum

Dyslexics consistently described this tangential flowed thinking as 'ongoing; without an end'. Within this research, divergent tangential thinking has been referred to by the D artists and in some cases the ND artists as to 'go off at a tangent'. However to the dyslexic artists this also means the ability to make meaningful links that converge with other thinking that can return to the point. This research therefore talks about tangential thinking as the ability to go off at a tangent and make meaningful links by converging and returning to other ideas for conceptual thinking. During the semi-structured interview stage, the views of both the D and ND artists had a convergence point within the middle range of the scale indicating that at this point there was a similar attitudinal value (see Key 10, p. 247).

The artists in this research who revealed that they thought in a flowed visual way tended to talk about space, movement and visual thinking points of reference and in particular an expanding and continuous flow. This research suggests that the ability to think in this way leads to valuable talents and experience, with a tendency for dyslexics to collect within art and design curricula. I would argue that this thinking could usefully be transferred to other subject disciplines. Therefore the very nature of dyslexic flowed thinking can be of value to our society.

Such thinking is spatial and moves continuously as though an object could be walked around in the mind; colours would vibrate and absorb 'to watch their own cinema' (Graves, p. 37 and p. 40). The artists thought in colour, space, time and shape. Conceptual thinking would involve visualisation, flowed and off-tangent to meet at a variety of converging points. The conceptual thinking to production resided in a variety of contextual situations, or, as the artists described, 'zones'. One artist called this situation as being 'electrocuted'; the place where the physical feeling meets the visualisation in a space that is internal. A highly descriptive analogy was that of space factored within a game of golf where time and space join to a meaningful point of convergence.

10.2 Intrinsic ability not fully recognised by the dyslexic artists

This research suggests that within orthodox educational systems people can lose this ability. However, for the dyslexic artists, this was their way of coping, their way of working to their strengths to gain some meaning from these systems. This emotional resilience included emotional intelligence that was receptive to the environment and able to make sense of surroundings. The dyslexic artists had formed their own way of viewing the world with meaning made up symbolic and semiotic references (see pp. 37-38). This approach is applied to creative practice and life in general and is intrinsic to the dyslexic artists. So much so that they themselves had not recognised how valuable this integrated cognitive approach is to the creative practice, in which they immersed themselves, and to their way of living. They are emotionally intelligent and analytical observers of life.

10.3 Dyslexic cognitive strategies are of value to others

Prominent dyslexic characteristics were 'flowed visual cognition', a culture of living and an emotional resilience. When questioned, at the third stage of the fieldwork, about thinking in this way, the non-dyslexic artists also started to understand this concept. All the artists, ND and D, were high functioning with an aptitude for technology; however the dyslexic artists tended to utilise technology across a wider range of media for their exploratory thinking to production. The use of technology was accepted as an inherent way of

working (70% of the dyslexic research group). Most of the ND artists worked in 2D and 3D practice with their thinking placed within 2D to work then within 3D as a staged process. Several ND artists said they thought in a series of stills and the transfer from 2D to 3D could be problematic due to the different approach to the medium (see pp.195-203). One ND artist said she had not thought of walking round an object in her mind's eye but probably could do this (see p. 206). Some D artists were surprised when it was suggested that not all people could think in a visual way (p.189).

The findings showed that the D artists had stayed with their way of thinking throughout the research; however, the ND artists found the research had opened new questions on ways of thinking which they wished to investigate further. The ability to grasp concepts is key to how a person might approach a range of subject areas, problems and life experiences. The research has found that all the artists would transact meaning from occurring situations, but that D artists would process this transaction in a way that enabled flowed thinking whereas this was underdeveloped for the ND artists (see pp. 201-208). However when asked to try to think in this way one ND artist suggested she would be able to this but just had not considered this approach to visual cognition previously (see p. 206).

10.4 Concluding comment: the benefits to education and learning

The educational experience of all the artists in this research was one of an Art and Design curriculum. They all had experienced secondary education and maintained their approach to visual cognition to finally enter visual arts education. Here they received the experience of integrating experiential learning and teaching, investigation, diagnostic learning and problem solving as key to the curriculum. This integrated approach to curriculum was a discussion Jerome Bruner engaged with in 1960. In *The Process of Education* (1960) Bruner discussed the cognitive theory that underpins the concept of a spiral curriculum, a curriculum that is so adaptable and flexible that any person can engage in intellectual development and thus the act of learning:

'We begin with the hypothesis that any subject can be taught in some intellectually honest form to any child at any stage of development'. (Bruner, 1960, p. 33)

Interestingly, Bruner suggests that learning happens if the curriculum is structured in such a way as to be understood by all abilities. The spiral curriculum allows the person to revisit the subject area and by doing so learning becomes richer and more complex as we start to understand at greater depth.

In *The Process of Education*, Bruner introduced this idea by describing intuitive learning, which is allowed to range across disciplines (1960, p. 38). With each visit more is explored, deepening learning toward new searches for new conceptual meanings. Thus new and old learning spiral together to reinforce knowledge, this theoretical debate also underpins the concept of flowed visual cognition. Bruner's 'spiral curriculum' allowed movement that is not linear to build up understanding and knowledge of increasingly complex ideas. He recognised that visual symbolic representation was crucial to cognitive development.

However, flowed visual cognition incorporates more than visual symbolic representation and situational experiences, there are inherent responses within a construct of inner and outer references, realities and environments that some artists referred to as the 'third eye'. The thinking approach to learning recognises that learning is flowed and ongoing. Therefore it is constraining to the learning process to place a set of outcomes as a prescribed goal to signify that learning has met the set task. Rather the flowed thinking approach to learning is to recognise that there is a starting point influenced by many ways of interpreting ideas, recognising meaning, strategies for thinking, analysis, reflection and situational contexts.

In *Mind in Art; Cognitive foundations in Art Education*, Dorn (1999) talked about art as an intellect that improves cognitive abilities; yet he questions how

this can be measured. He cites Efland's viewpoint that all learning requires strategies to assemble knowledge and perspectives on the learning problem. Efland notes that in the arts there can be little obvious structure so networks of concepts are required to access interrelationships of key phenomena (Efland cited in Dorn, 1999, p. 2). Efland proposed that there should be an integrated approach to cognition in arts education; this would integrate meaning, making and understanding as the underpinning principles. The theoretical viewpoint is moved forward to recognise that ways of thinking are a result of the internalisation of knowledge, social cultural interaction and cultural identity of the creative practitioner. This thinking emphasised a shift from the behaviour of the person, from events or objects, to structures of knowledge through concepts created by the mind, thereby resulting in three different orientations of cognitive constructivist thinking:

- A view of the symbol as an entity
- A sociocultural reality as a social construct not an individual one
- The internal conceptual construction of the person's own views of reality; integrated meaning making

Thus reality is a construct of perceptions and knowledge. Therefore a person is guided by personal effort, interest and experience including the social and cultural context in which that person will acquire new knowledge (Efland, 1999, pp. 78-79). This perspective is embedded within the investigative focus of this research. The research has set out to investigate a structure of conceptual thinking that can build on knowledge and understanding of meanings. The analysis has shown that the visual artists structured their knowledge through connections with their inner and outer environments, therefore incorporating integrated meaning making within a socio-cultural context. The different thinking skills of the artists enabled them to adapt their knowledge-seeking strategies. The artists drew meaning from situations as and when they occurred (see Appendix D, p. 303 and p. 55).

All the artists would apply this integrated approach to conceptual thinking, while the dyslexic artists tended to apply the integrated approach within a multi-dimensional framework that this research has analysed as flowed visual cognition.

Creativity is debated in Chapter 2. Margaret Boden talks about the widespread ability to recognise analogies and further suggests that creativity is the ability to acknowledge concepts and make meaning deriving from a range of disciplines. This view links with Efland's cognitive theory of an integrated process of structures, conditions, contexts, interpretations and imagination. Boden argues that creativity is about a range of manifestations that demonstrate a reach across every aspect of life, not just the visual arts (see p. 34). West argues that creativity involves transforming visual thinking into abstract concepts, the ability to move thinking around space and pattern recognition to make links of thought (see pp. 43-45). The literature review (see p. 35) for this research found that there are agreed commonalities on creativity; these were:

- Ability to conceptualise across disciplines
- To navigate complexities to bring a solution
- The ability to make links
- To be able to innovate idea making

As cited earlier in this research (Boden, 1990), it could be the case that the process of creativity in flowed visual cognition could be applied not just in the visual arts but also in other disciplines through exploration and the transformation of conceptual spaces in people's mind's eye. After all, creativity and imagination is owned by everyone, has no limitations and is intrinsically transformative, explorative and conceptual (Boden, pp. 33-35).

The evidence from this research proposes that there is intrinsic creative flowed visual thinking, which can reside within dyslexic cognition (see alternative debate in p. 29). Steffert notes that dyslexics have neural

processes whereby they are able to be more creative in a visual spatial sense due to greater cognitive flexibility (see pp. 35-36). This cognition incorporates cultural references; there is an internal conceptual construct of reality and that of symbol processing.

As discussed in Chapter 2, our society is saturated with visual images, images that we often process subconsciously (Berger p. 41). The contribution of this research is an additional approach to the constructivist paradigm described in Chapter 2, which is the intrinsic dyslexic construct, to think at the same time in more than one dimension, to produce creative practice that is set within multi-faceted contexts. These contexts include the integration of the inner and outer worlds, the characteristics of which are: the ability to map points of reference; the flexibility to adapt and change the flow of visual thinking through a range of dimensions at the same time and at different periods of time. This has been articulated as a continuous flow of thinking that is in constant exploration. This flowed visual cognition has not been taught in linear mainstream education, however it is of value to many areas in the workplace that prize the ability to conceptualise across disciplines, to navigate complexities to bring a solution, the ability to make links and to be able to innovate idea making; these are the commonalities of creativity (see p.35 and Chapter 9). This research has evidenced the link between creativity and an intrinsic dyslexic flowed visual cognition. The research has argued that there is a value to dyslexic cognition that contributes talent and gifts to society if articulated by dyslexic people themselves and by those who are non-dyslexic. Let us recognise that dyslexic flowed visual cognition is a creative strategy with potential for many disciplines.


10.5 Further investigations and debate

Having reflected on my own position within this research and concluded on the value of the research the next stage is to further investigate how dyslexic people might articulate their thinking as a set of discourses. The purpose is to start a dialogue within a cross-disciplinary context to build on these findings. In August 2016, I exhibited at the Westminster Arts Reference Library.

Within this exhibition space I collaborated with other dyslexic and non-dyslexic artists to articulate the state of being an 'Outsider'. The phenomenological and ethnographic approach to this research (see pp. 65-66) is therefore continued.

Westminster Arts Library, 35 St Martin's St, London WC2H 7HP

OUTSIDERS




Michelle Fulham
Leon Cole
Katherine Hewlett
Monday 1 August to 27 August 2016
Opening times: 10am - 8pm. Mon-Sat

Private View; Monday 8 August.
6 - 8pm all welcome

This is an exhibition exploring the condition of being different and outside of the mainstream.

The other experience: the black dog mood, the contrasted faces, identities and different thinking.

Drawn from the experience of seeing London locations barred to others in the 80's and how these limitations are now changed to the austerity of managed systems. This exhibition will contribute to research at Norwich University of the Arts



CONTRASTED FACES.

"Look on this picture, and then on that."—SHAKESPEARE.




Fig 25 Exhibition poster 2016

The OUTSIDERS is a final exhibition drawn from the research: 'Social cultural investigation of visual dyslexic cognition'. This research notes the value of the Outsider.

In 1981 the curator and researcher Katherine Hewlett came to London to study at the Royal College of Art. At that time there were still notices in Public Houses saying '*No dogs, no blacks and no Irish*'. Now we do not have these notices as a physical reminder of such thinking, however, we do have the hidden thinking that can lead to such exclusion of those who are deemed as the Outsiders.

Today this exhibition celebrates the Outsiders with work drawn from multicultural non-dyslexic and dyslexic artists: Michelle Fullam (Ireland) and Leon Cole and Katherine Hewlett-Jovanovic who are dyslexic and from Antigua, Jamaica, Britain and Montenegro.

We ask you to add your comments on the value of Outsiders as part of this exhibition work. Please add your views on the roll of paper supplied!

Overview of the original research: The research took as its initial premise that thinking approaches of dyslexic visual artists, in their creative production, are little investigated. The purpose of this research was to test for such thinking. The research set out to further explore whether there are thinking differences between dyslexic and non-dyslexic visual artists. The research evidenced a distinctive mode of dyslexic visual thinking and went on to probe its value for modern mainstream education and society.

The research also evidenced that there is a dyslexic cognitive culture positioned within the dynamic of the 'Outsider' and this is of value.

Fig 26. Outsider Exhibition statement

All conclusions to this research will be disseminated through papers at conferences. This research investigation is to be submitted to the National Dyslexia Research Centre. The findings have contributed to a presentation at the National Association of Disability Practitioners conference (NADP 2016) and have been published in the NAPD journal 2016. The research findings have informed my own teaching practice in the visual arts and in the field of academic study skills (Further and Higher Education) and training for the charity AchieveAbility. The research outcomes will be disseminated through a range of virtual networks.

Quotes from dyslexic artists during stage three:

'You just do it. It is almost counter to intellectual-analytical approach. It is something innate. I don't know it just feels good - it feels right'.

'But that bit when you have an idea in your head. It's a bit like being a blind person. You kind of know what it looks like - but if I knew exactly what it looked like - I could not do it. I would think Oh Christ I may as well do an ordinary job'.

'You get further away to the point, you are so far away that you are sometimes connected; you delete certain parts then you get closer. Then you realize the ideas are far away from each other. Then they are quite connected when you introduce another element'.

'You got the ideas, the two expansions then that will make a solid triangle idea. Doing this you can get two things closer and closer so when they become further away from each other, from the thought, then they get closer to each other'.

'Some words have wonderful feelings when you say them, some are just words and don't make sense. I see an individual word even when I am mispronouncing it. What it creates is the pattern. I start to see yet another word, as a thing, not a scary word, it helps me write and think'.

'If you try to analyse creative life, you kill the thing'.

'You go into a space. You have to be in the right place at the right time, nothing else matters - the memory of that link is real - its like being electrocuted'.

'It is similar to feeling an internal physical thing and then visualization - Its more as a feeling rather than a picture - despite being visual - when it comes to creativity it is a special place. It is about space having an internal space'.

'Everything is very fast with incredible rushes. I have had to physically slow down as my thinking can get faster and faster. It is like a spiral and I keep getting spun round and round. Its all going fast like a train running fast'.

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Glossary

AchieveAbility	Charity promoting the strengths of dyslexia
ADT	Arts Dyslexia Trust - an organisation of dyslexic artists lobbying on dyslexia awareness as a gift
ADO	Adult Dyslexia Organisation
ATL	Association of Teachers and Lecturers
Axial Coding	Is the disaggregation of core themes during qualitative data analysis
Behaviourist	Learning through observation
BDA	British Dyslexia Association a national organisation to lobby for greater awareness of dyslexia
BIS	Business Innovation and Skills (a government department responsible for HE)
Cognitivist	Learning that is informed by a set of internal mental processes.
Constructivist	Cognitive functions that happen through a collaboration of experiences and ideas. Learning through a series of actions within a social construct.
Constructionist	The social construct of reality
CNAAB	Council for National Academic Awards. Was an accrediting body for arts degrees
Creativity	As defined by this research; the ability to conceptualise across disciplines, to navigate complexities to find a solution and to make thinking links to innovative idea making
Critical-emancipatory	To empower those participating within research through action based evidence
CPD	Continuous professional development
DCSF	Department for Children Schools and Families

1,2,3,4 Dimensions	<p>1 D: Linear in any direction.</p> <p>2 D: Linear in any direction and creates a plane</p> <p>3 D: Includes width, height and depth- spatial.</p> <p>4 D: The fourth dimension is all space that one can get to by travelling in a direction perpendicular to three-dimensional space: 'space-time'</p>
Divergent	To go off at a tangent
DSA	Disability Student Allowance
Dyslexia	A different way of processing information often around literacy, sequencing and difference with short-term memory. An unusual balance of skills.
Dyslexic Culture	Dyslexic emotional resilience as a self-contained individual navigating a global multifaceted society
Dyspraxia	Immaturity of the organisation of movement affecting the planning of what to do and how to do it. Associated with perception, language and thought
Dyscalculia	Inability to see, handle or understand numbers
Epistemology	The theory of knowledge, especially with regard to its methods, validity, and scope, and the distinction between justified belief and opinion
FEFC	Further Education Funding Council
Grounded theory	Hypothesis or research focus is formulated during the investigation within an iterative process of analysis
HESA	Higher National Statistical Agency responsible for obtaining data from Higher Educational institutions
High Functioning	Setting strategies in place to achieve in order to succeed in thinking and learning.
HE	Higher Education-entry as from 18 years
IQ	Intelligence Quotient (IQ) is a score derived from one of several standardized tests designed to assess human intelligence

Lateral Thinking	Solving problems through an indirect and creative approach, using reasoning that is not immediately obvious and involving ideas that may not be obtainable by using only traditional step-by-step logic. (Edward de Bono 1967)
Learning Styles	A range of learning preferences that can be attributed to different ways of processing information and thinking.
Linear Logic	A process of thought following known step-by-step progression where a response to a step must be elicited before another step is taken
LLU+	Language and Literacy Unit was based at South Bank University: expertise in learning styles research.
LSRC	London Skills Council Research Centre
LTM	Long term memory - deep learning
Mainstream Education	Education that is directly state funded managed by a Trust, Foundation or Local Authority
Minicolumnnophy	A practical understanding of the differences in neural thinking patterns
Multi-dimensional Thinking	Thinking within a range of dimensions from one to four to include time, sound, spatial depth, visual thinking.
Multi-faceted	A situational context that has many phases aspects or abilities.
NEETS	Not in education, employment or training.
Neurofeedback	Using brain scanning equipment called electroencephalogram
Neuroaesthetic	Neuroscience of how the brain works in a creative way to produce aesthetic judgments.
Non-Tangible	Cannot be touched
Normal Society	individual behaviour that conforms to the most common behaviour in society
Ofsted	Office for Standards in Education

ONS	Office for National Statistics
Outsider	Differences in thinking that do not build on the norm. (Dyslexic perception of own position in society)
Phenomenological Interpretative Analysis	Aims to offer insights into how a person, within a context, makes sense of a given phenomena
Participatory action Research (PAR)	Research in communities that emphasizes participation, action, collective inquiry and experimentation grounded in experience and social history.
PL	Personalised learning- tailoring education to individual need and aptitude
Post 16	Further education in schools and colleges
Positivist methods	Promotion of experimental and survey research and the quantitative forms of analysis associated with them
PRUS	Pupil Referral Units
QAA	Quality Assurance Assessment
SATs	Scholastic assessment tests
SEN	Special Educational Needs
SpLD	Specific learning difference. A term to define a range of different neurodivergent ways of thinking
Spark Seeing	The visual moment of realisation
Flowed Visual Cognition	The model of visual thinking that flows and captures tangent thinking at a variety of converging points; limitless in flow.
STM	Short term memory- surface learning
Subscription Tangibility	Work produced to cater for a market
Synaesthesia	To have an intense reaction to the five senses

Tangential thinking	Ability to go off at a tangent and make meaningful links by converging and returning to other ideas for conceptual thinking
Thinking Point	The place from which the idea or concept flows
Time lapse	Is a technique whereby the frequency at which film frames are captured (the frame rate) is much lower than that used to view the sequence. When played at normal speed, time appears to be moving faster and thus lapsing
VAK	Visual Auditory and Kinesthetic
Visual Cognition	To visualise objects, plans and outcomes in conceptual flow
Vocational Education	Practical and relevant to the workplace
Zone of Proximal Development	The difference between what a learner can do without help and what he or she can do with help.

Appendix A

Stage two survey questionnaire (example)

The investigation of dyslexic thinking and creativity in the visual Arts

Context

This survey is to find out how thinking informs creative production. The questions are therefore designed to elicit this information from both dyslexic and non-dyslexic artists.

This research aims to investigate thinking approaches to the process of work conducted by visual arts practitioners who are dyslexic.

The purpose is to investigate whether practitioners (who are dyslexic), approach the process of their creative work in a particular way that might inform the development of differentiated learning styles in mainstream post-16 education.

The research aims to collect evidence through mixed methods such as in depth case study interviews, one to one semi structured interviews and an online survey

If you would like your contribution to be acknowledged in the PhD please indicate this by adding your name and email to the end of this survey. You will then be invited to the private view of the Research Exhibition in October 2012 in London at Westminster Reference Library. In addition there will be a lucky draw and the winner will receive £100.

The summary of the findings of the research will also be sent to you for your interest. Norwich University College of the Arts and the University of the Arts would like to thank you for your input to this piece of research.

It is important to the research that you feel able to provide the information in various ways. You can write, draw or you can record your verbal answers downloaded as an audio file and send to hewlettuk@yahoo.com. If you draw please send as a scanned document letting me know the linked research question.

Section 1- General information (please circle)

Are you dyslexic

Yes

No

Are you **male** Yes

female

How would you describe your educational experience?

My educational experience has often been challenging, but has been invigorating and hugely rewarding. It has always been enjoyable, and I believe I have learnt much and developed as a person as a result.

Would you say you have benefited positively from any role models?

Yes I believe that a number of tutors and teachers over the years have proved hugely inspirational and influential. My A-Level Art teacher, for example, was a lovely, energetic, thoughtful, enthusiastic and intelligent person who helped me grow as an artist, inspiring me to pursue art at degree level.

Section 2- Ways of interpreting ideas

How do you gather information to develop your ideas?

I carry out various forms of research in order to develop my ideas. Sometimes this is a hands-on practical approach experimenting with materials, other times it is research into the work of other artists or practitioners, or research into philosophical and scientific theory to provide a context for my ideas. This theoretical and contextual research is often book-based, but usually involves internet research.

How do you remember your ideas?

I record ideas in a sketchbook or notepad, jotting down various points or fragments of thought as and when I think of them. If I do not have either of these pads at hand, I just write on scraps of paper. I have numerous lists on scrap pieces of paper!

How do your ideas gain meaning through your work?

My ideas gain meaning through a theoretical and contextual underpinning, which is formed through my accompanying research.

Section 3 -Your strategies for thinking

What are the experiences that give you direction?

All life experiences give me direction. I learn as much as I can from my mistakes, and constantly strive to do better. I am not content unless I am achieving the highest I can.

How do you capture your thinking?

I capture my thinking through written notes (sometimes for myself, sometimes for others), and in a reflective journal, which often documents the evolution of my ideas.

How do you analyse your thinking?

I often analyse my thinking through more thinking. I tend to over-think a lot.

How do you approach your thinking to production?

Often this involves spontaneous experimentation with materials. Other times, I rely on carefully considered and thought-out approaches to making – this is often because I am scared to make mistakes, so strive to get it right first time. If my production does not match my thinking I often think of this as a failure.

Section 4- Your views on creativity

What do you think are the skills and talents attributed to creativity?

Creative skills are those that are 'outside of the box'; it takes talent to think of ideas that others would not, and takes skill to execute those into finished ideas. The ability to draw is an obvious skill, which is attributed to most creativity in the visual arts.

What is the nature of your own creative practice?

My creative practice is one of a Fine Art nature. I am interested in the concept of time, and therefore use ice to produce temporary sculptural works that require an audience to remain with the work for a period of time in order to observe the melting process, and therefore the 'life' of the sculpture.

Can you give an example of your own way of creative thinking?

This is difficult to put into words; often thoughts are spontaneous, and I am not necessarily aware of their origin or why I have thought of them. A recent example perhaps relates from my development from using ice to using glass wax – this is a material that shares a number of visual qualities with ice, yet is a permanent material – this enables me to continue addressing the visual aesthetic typical of my practice, but is now enabling me to question permanence within my work, whereas before I was only able to question temporality.

By what means do you acquire inspiration for your ideas?

I acquire inspiration from research into the work of other artists. Seeing how others have overcome various problems to produce works of art inspires me to tackle any problems or issues that I face with gusto, in order to create something worthwhile.

Section 5- Your approach to creative production

Does your creative production involve working on several parts of your work at one time?

Yes; I continue to undertake contextual research whilst in the process of making practical work; I am therefore constantly informing my own ideas in order to develop them further.

How do you review and improve on your practice experience?

I maintain a reflective journal that enables me to record all aspects of practice experience: development of ideas, experimentation with practical materials etc. This enables me to identify any strengths and weaknesses within my work so that I can identify ways of progressing my ideas further.

What is your preferred way of acquiring information and influences?

Appendix B:

The four orientations of learning: Merriam and Caffarella (2007 p. 295)

Aspect	Behaviourist	Cognitivist	Humanist	Social/ Situational
Learning Theorists	Thorndike, Pavlov, Guthrie, Watson, Hull, Tolman. Skinner	Koffka, Kohler, Lewin, Piaget, Ausubel, Bruner, Gagne	Maslow, Rogers	Bandura, Lave and Wenger, Salomon
View of learning process	Change in behaviour	Internal mental processes- insight, information processing, memory, perception	Personal act to fulfil potential	Interaction/observation in social contexts. Movement from the periphery to the centre of community practice
Locus of Learning	Stimuli in external environment	Internal cognitive structuring	Affective in cognitive needs	Learning is in relationship between people & environment
Purpose in education	Produce behavioural change in desired direction	Develop capacity and skills to learn better	Become self-actualised and autonomous	Full participation in communities of practice and utilisation of resources
Educator's role	Arranges environment to elicit desired response	Structures content of learning activity	Facilitates development of the whole person	Works to establish communities of practice when conversation and participation can occur
Manifestations in adult learning	Behavioural Objectives- Competency based education. Skill development and training	Cognitive development. Intelligence learning how to learn. Memory/age	Andragogy Self directed learning	Social participation Socialisation Associationalism Conversation

Appendix C

Piagetian and Vygotskian conceptions of cognitive development (Efland, 2002, p. 41)

Characteristics	Piaget	Vygotsky
Development end point	Progress toward logical scientific thinking	Progress is sociocultural learning toward culturally appropriate practices
Nature of mind	The mind is in the brain, an organisation of inner structures called schemata or symbols	Mind and consciousness are made possible by the acquisition of the tools of the culture, especially language
Key concepts	Assimilation Accommodation Equilibrium	Mediation Internalization Tools and signs
Stages of development	Sensimotor Preoperational Concrete operations Formal operations	Lower order mental processes; elementary attention, perception, memory Higher order mental processes , internalisation, enculturation
Implications	Logical-scientific thinking is favoured over affect. Overcoming feelings is seen as progress toward greater objectivity and rationality. Symbol processing invites dualism, separating learners from the situation where learning occurs. Instruction focuses on the mental operations of the learner as a lone individual	Learning is bound to its social context Education involves mediation between two or more people Tools (e.g. verbal and visual language) foster development. Learning is enculturation. Instruction focuses on the cultural practices of the learner.

Appendix D

Efland's integrated cognitive theory for arts education (Efland, 2002, p. 78)

A Cognitive theory explaining learning in the arts will need to meet the following conditions. It will transcend the computational analogy, which restricts thinking to literal representation of what is real as opposed to metaphorical constructions that enable one to devise alternative conceptions of what is real. Among the things it should explain are the following:

- The symbolic character of thinking, how symbols develop and change artistic activities, how artists find ideas, how ideas undergo modification and how works of art are interpreted by viewers
- How we acquire new knowledge and skills by constructive processes or enculturation into knowledge communities
- How prior conditions structure new knowledge
- How people monitor their own learning and how metacognitive strategies are learned.
- The cognitive functions of emotions
- The range of symbolic entities; including propositional (verbal or numerical) and non-propositional (gesture, images, metaphors) entities.
- How knowledge becomes meaningful when linked to its social context
- How meaning is transacted from the situations where it occurs, for example cognitive apprenticeship
- The conditions of transfer; ways that knowledge from one domain finds applicable in other domains
- Domain specificity; the idea that proficiency in one domain may not guarantee proficiency in another
- The role played by the individual's motives, interests and purposes in activating learning, for example the role of human agency in learning.
- How differences in the structures of knowledge require that learners adapt their knowledge seeking strategies.
- The role played by imagination in the creation of works of art and in their interpretation.

Appendix E

Likert Scale Analysis; stage three

The investigation of dyslexic thinking and creativity in the visual Arts

Example of the Lickert Scale analysis for the semi-structured interviews as articulated by the dyslexic artist (sic)

Section 1- General information (please circle)

Are you Dyslexic	Yes	No (sic)
Are you male	MALE	female (sic)

Section 2- Ways of interpreting ideas

How do you gather information to develop your ideas?

To note the red denotes the scale chosen for the significance of value by the artist.

1) Any and every where (sic) stealing ideas from history the news, living and dead artists, film, radio the internet students,

2) I am a scavenger and nothing is too trivial or too important to be a potential source for inspiration ,

Always	Mostly	Quite Often	Sometimes	Least
5	4	3	2	1
5	4	3	2	1

How do you remember your ideas?

Some time I don't but I have so many if one or two get away it dosent (sic) seem to matter than of couse (sic) I refind(sic) them and that too is fun.

Always	Mostly	Quite Often	Sometimes	Least
5	4	3	2	1

How do your ideas gain meaning through your work? EXPANDED ON

- 1) When the work is finished there is still an ongoing dialogue.
- 2) Something that one didn't expect seeping out, a big idea over time seeming empty and trite,
- 3) A challenge to take up the theme and with the knowledge attempt to get it right next time.

Always Mostly Quite Often Sometimes Least

5	4	3	2	1
5	4	3	2	1
5	4	3	2	1

How do you make links between ideas?

- 1) Poetically there is no join the dots with creative thinking nothing can be "unthinkable"
- 2) but I have favourite themes and concerns and they have been much handled over the years new ones pop up

Always Mostly Quite Often Sometimes Least

5	4	3	2	1
5	4	3	2	1
5	4	3	2	1
5	4	3	2	1

Section 3 -Your strategies for thinking

What are the experiences that give you direction? EXPANDED ON

- 1) I think dyslexia means that it is not safe to make assumptions, things for me are constantly changing, a word can change in a flash and (...)

2) Things that are easy for some others are strange and troubling Dyslexia makes one have to rig up strategies and think round problems.

3) Despite the success stories of amazing successful dyslexics this thinking round problems can slip in to deviousness and it is not any surprise to me that our prisons house many more dyslexics than they should.

Always Mostly Quite Often Sometimes Least

5	4	3	2	1
5	4	3	2	1
5	4	3	2	1
5	4	3	2	1
5	4	3	2	1
5	4	3	2	1

How do you capture your thinking? EXPANDED ON

1) I feel that I am on to a winner, it is an initiative and unconscious process and is exciting absorbing and like a self induced drugged state when it goes well there is nothing to beat it (save really good sex)

Always Mostly Quite Often Sometimes Least

5	4	3	2	1
5	4	3	2	1
5	4	3	2	1

5	4	3	2	1
5	4	3	2	1
5	4	3	2	1

How do you analyse your thinking?

1)I try not to analyse it too much because the pinning things down too much lends its self to be getting things too tight and restrictive

2)the job of the artist is not to tell people what to think and feel but to invite the viewer in this I find requires a bit of ambiguity.

3)I hate people shouting at me and telling me what to think so why would I want to make some thing I would want for my self to give to others?

4)I think that it is important not to just make the first thing that comes into my head but spend sometime mulling and playing with concepts.

Always Mostly Quite Often Sometimes Least

5	4	3	2	1
5	4	3	2	1
5	4	3	2	1
5	4	3	2	1
5	4	3	2	1
5	4	3	2	1

Section 4- Your views on creativity

What do you think are the skills and talents attributed to creativity?

EXPANDED ON

1)The ability to look and think in a playful manner to have an open mind and not too many preconceptions.

2)To question things and oneself and to want to communicate and share some of the experience.

Always Mostly Quite Often Sometimes Least

5	4	3	2	1
5	4	3	2	1
5	4	3	2	1
5	4	3	2	1
5	4	3	2	1
5	4	3	2	1

What is the nature of your own creative practice?

1)I make sculpture and

2) write.

Always Mostly Quite Often Sometimes Least

5	4	3	2	1
5	4	3	2	1
5	4	3	2	1
5	4	3	2	1

5	4	3	2	1
5	4	3	2	1

Can you give an example of your own way of creative thinking?

I have already, I began this with a description of my school days and I think it illustrates an example of creative thinking

Always Mostly Quite Often Sometimes Least

5	4	3	2	1
5	4	3	2	1
5	4	3	2	1
5	4	3	2	1
5	4	3	2	1
5	4	3	2	1

By what means do you acquire inspiration for your ideas?

Just living in a way that is receptive, There is so much amazing stuff out there!

Always Mostly Quite Often Sometimes Least

5	4	3	2	1
5	4	3	2	1

5	4	3	2	1
5	4	3	2	1
5	4	3	2	1
5	4	3	2	1

Section 5- Your approach to creative production

Does your creative production involve working on several parts of your work at one time?

1) Yes I am happy to drift for making in the physical sense to writing prose and poetry.

2) If you mean by your question do I make things in bits and then put them all together that is also true most of the time.

Always Mostly Quite Often Sometimes Least

5	4	3	2	1
5	4	3	2	1
5	4	3	2	1
5	4	3	2	1
5	4	3	2	1
5	4	3	2	1

Appendix F

Qualitative investigation of stage two survey: coding of key words

Introduction to the template:

Open coding of key words drawn from the stage two survey. **To note, there is colour coding to denote groupings**

The following template is a snapshot of the template of keywords drawn from 40 questionnaires received in April 2012. Dyslexic and Non Dyslexic visual artists were sent the questionnaire. The questionnaire was set out in sections and the analysis below is designed to note the sections and the section sub headings.

Approach: Each questionnaire received was read for keywords. These keywords are logged below to capture meaning. The groups were set out according to age and D or ND. For the purposes of this template the groups are also set out according to gender.

Analysis was through key points drawn from the surveys (Appendix H, p.345) and from visuals drawn from the keywords listed in the template below (Appendix G). This was then produced in 'Word Clouds' to convey immediacy of visual information and for fuller understanding by the researcher (Appendix Q p.364).

Qualitative analysis 40 survey	Dyslexic 12		Non Dyslexic 28	
Key words Analysis in Word clouds	D 5 Male 3 25+	D 8 Female 2 25+	ND 7 Male 4 25+	ND 21 Female 9 25+
Teen/ mostly horizontal/ organic carrot				
S2 Ways of interpreting ideas Sources	Stealing history news Film radio internet scavenger trivial students different visual associations question comfortable direction expand hooks happy strongest three images three print three lists collect photos draw visualise alone develop	Visual exploration net books discussions feedback see clearer light keep records photos books visual pictures highlighting text	Obsessive research conversations clear direction focus research gathering internet imagery text talking paint sketch photograph on- the-spot laptop folder text pictures photographs	Random complex Intuition dreams visualisation technology Books journals perspectives convenience mobile phone camera TV observe together happens sketch

Gathering remembering, capturing	Most time write book lists strong beginning clarity happy focus energy happy refined fun	Draw words notes diagrams flow pictograms sketchbook bookmark Carry notepad	Obsessive Sketchbook memory vivid accumulative store write sketch solidify concept mentally processed constantly paint see paint notebooks jot knowledge recorded pictorial scribble test mechanical movement mechanical quotation picture	Trust memory new my head function ideas time space one place my head car journeys words colours textures writing jot note books story lists sketch my head car journeys colours textures writing jot story photographs internet notes write computer relevant sketchbook written note books website mind map drawing
----------------------------------	--	---	--	--

Meaning and links	On-going dialogue big idea challenge theme themes concerns handled new visual expression happy resolved finished version finished versions lists drawings	Flow sense express visually walking moving body mental emotional walks trips discussion spark reaction initial research thought process	Working Mulling synthesis focus revolve concept theme visually contextual theme thematic narrative contextual back-story look themes develop core concept investigate research love quantify initial concept paint plan superimpose work implicit viewer title relates viewer interpreted compares obscure interpretations personal change making appearance function	Logical emotional sensorial change purposeful painting doing imagined grown other ideas grouped expanded inner resource frustrating express time space others perceive tweaking emotional satisfaction don't imagine grown other ideas grouped expanded story translate look interpretation exploration experimentation frustrating express time
-------------------	---	---	---	--

S4 Views on creativity-Skills	Linear one thing everything new way pretending weird telling pretend stuff happens playful open mind question communicate ones self share experience	Get talent drawing key finding tick challenge process discipline organising reflecting doing visual person helps	Collecting data dislocated dreams constraints ability process ideas ability skill visual linguistic skill artistic skill talent ability there see there inherent awareness visualisation imaginative exist born exist inherent different confounded inherent aptitude confounded skill observation possession talent time realised talent practice	Fearless survival resourceful eye dislocated drawing collecting data process spontaneous free colour combinations change unexpected connections compulsion organisation ideas happens organisation resources persistence seeing through love structure pattern love courage patterns colour resourceful 1 Dimension 3 Dimension experimentation
--------------------------------------	--	--	--	---

Own practice Own way of creative thinking	Sculpture write lively aggressive stubborn open minded downtrodden write harsh reality average bi-polar never review	Active walking doing write spin photos light reflector flags evoke atmosphere visit site interaction visual dialogue sketches graphic design teaching projects packs communicate	Teaching connections deconstruction world life stems personal theme wrap crafting physical solidify time leniency alter change many forms research initial concept improve painting drawing visually pleasure visual impact animated video impact mechanism own design animate visualised amusement provoked scale materials versions discarded constructed version realised acquiring self-	Education sculpture installation emotional technology painting ceramic sculpture installation teaching dreams wider jewellery visually space prints collage writing focus stories unfinished limbo edit expand improve enhance events niche invented plot change re-interpret imitate nature vibrant colour exaggerate intensify
--	--	--	--	--

Appendix G

Example of key points from stage two surveys

Dyslexia Male 18+ (2)

S2 Ways of Interpreting Ideas (sources)

Gathering remembering capturing

- Internet a big one- lots of ideas- then write up on computer
- Write as much down as possible – on iPhone
- I remember things that I find continuously surreal- through the expansion of the mind at night time
- *Personal influences- talking*
- *Remember by drawing stuff in a little book*

Meaning and Links

- Through listening to music- music and film a special relationship
- With lots of experimentation
- Making links through a clear understanding with the audience (bonding)
- *All based on personal ideas*
- *Resemble each other for physical and contemporary meaning*

S3 Strategies for thinking

Experiences giving direction

- Working in the Studio- film offices
- Seeing documentaries – real stuff
- Capture thinking by putting pen to paper and shooting film
- Can not have others work on my projects- can not think
- *Disobedience towards basic rules of thinking*
- *Capture thinking by illustrating the idea as soon as it comes to mind*

Analysing and thinking (aural doing)

- Difficult- on paper first for projections from the mind- expand much
- *Comparison to my mind and what I produce*

Production

- Stressful- but production is core to making film
- *Imitation- of what I think- produce what is in my mind*

S4 Views of Creativity

Own practice- skills needed

- Skills needed are motivation- do whatever you want to do
- Thriving on everything that comes my way
- Telling stories of emotion (love- heart- beauty) to show others (idealistic)
- *Experimentation- brave to do what I think and go wrong*
- *Celebrate failure*
- *Risking*

Own way of creative thinking

- Connection between human beings- correlates in normal life- where your mind takes you
- *I go ahead even if told can not be done- see the worst (young....)*

Acquiring ideas

- Inspiration from other artists
- *By what is not happening to me at the moment- (seeing the other side) what would not work*

S5 Approach to production

- Several ideas at one time
- *Yes several parts*

Review and influence

- Learning from mistakes- equates with wisdom
- *Look at what went wrong- tweak- the smaller before moving on.*

Reconfirming sources after the survey- is there any difference from the beginning

- Word of mouth
- Writing it all down
- Further learn for future creative processes.
- *Personal experiences*

Appendix H

Statistical analysis of Section 1 and 5 of the survey

Quantitative analysis	Dyslexic 12		Non Dyslexic 28	
40 survey	30 %		70%	
Gender	4 Male	8 Female	7 Male	21 Female
Access to Mentor	3	6 (75%)	4	18 (79%)
No access	3		6	
Age				
18+	1	6 (58%)	3	13 (57%)
25+	1	1 (16%)	1	1 (7%)
35+			1	1 (7%)
45+	2	1 (25%)	2	6 (28%)
Educational level				
Adult Ed/FE				1 (3%)
Degree	2	7 (75%)	5	16 (75%)
PG	1	1 (16%)	2	3 (19%)
PhD	1 (8%)			1(3%)
Geographical area	Dyslexic 12 M F		Non Dyslexic 28 M F	
London	1	1 (17%)		2 (7%)
Urban out of London	3	7 (83%)	5	15 (71%)
Rural			2	4 (22%)
Generic subject area				
2D	2	1 (25%)	9	4 (46%)
3D	1(5%)		8	2 (36%)
Multi media	6	2 (70%)	4	1 (18%)
Working on several parts at one time 'tangential'	4	6 (82%)	2	13 (54%)
Working on one part at one time	1	1 (18%)	3	9 (46%)

Appendix I

Example: coding of questions from the semi-structured interviews for identifying links and axial coding in template Appendix N

Questions coded for semi-structured interviews: stage three

Themes of emphasis/points made in survey informed the questioning

Questions from the semi structured ten interviews. **To note:** The colour coding links to Appendix N

Dyslexics

D1

To note- Useful feedback on the questionnaire

Ways of interpreting ideas

- 1) How do you conceptualize your ideas?
- 2) How does this happen in your mind?
- 3) Do you see your ideas in your head?

How do you remember

- 1) How do you record them (ideas)?
- 2) Are your memories in colourful 3D/ 4D ?
- 3) Can you recreate images through dreaming?

How do you make links

- 1) With different ideas spinning off- do you work in different medium to get one idea out?
- 2) Do you work with others?
- 3) Do you work on a specific concept?

Strategies for thinking/ experiences give you direction

- 1) Do you think dyslexic artists tend to be much more open?
- 2) Do you feel comfortable with dyslexic artists?
- 3) Do you think there is an empathetic dialogue with other Dyslexic artists?

Approach on thinking to Creative production/analysing

- 1) Do you have a line in your mind of your references for creative production?
- 2) What sort of space does your creative image inhabit?
- 3) Does your visual image move?
- 4) Does it have several colours?
- 5) How do you feel about colour?
- 6) What is the linkup in your minds space?

Views on creativity/ how do you acquire inspiration

- 1) That concept idea in your head-Do you have it all the time? Do you hold onto it?
- 2) When does the concept become solid?

Way of creative thinking

- 1) How do others come and collaborate with you on the work?
- 2) Can you give an example of your creative thinking?
- 3) How do you see a thing that is not a scary word?
- 4) Do words translate to the way you think?
- 5) Do words stay static or do they move?
- 6) Are the words together or on their own?
- 7) Can you walk round your words?
- 8) What colour are they now?

Approach to creative production

- 1) Has this approach helped your creative practice
- 2) You work on several parts at one time?
- 3) How do you manage so many ideas, where do you put them?
- 4) Is it spiral, shapes moving around?
- 5) Do you move around society able to re-energise and recharge on your own
- 6) How do you see everything?
- 7) Does it go fast?

D2

Ways of interpreting ideas

Gathering information/ gain meaning

- Do you have a multi layered approach to gathering information for your ideas?
- When you scavenge for materials- are you looking at things visually for real interest in what you want to do?
- Do you have it in your head when you are looking for inspiration?

How do you make links between ideas

- 1) It sounds like your mind ranges all over- do you find this hard?
- 2) So you find finishing hard?

Your strategies for thinking

1. Where does the buzz come from?
2. What is the tentative part of engaging others?
3. How do you analyse? You say when thinking 'I try not to analyse' - can you explain?
4. Is there a difference between analyzing and concepts?

Views on creativity/ production

- What do you admire?
- Do you see in a detached way?
- I want to ask you about your creative production?
- Do you like meandering investigation?
- When you consider your production what does it look like when you are visualizing- is it special- is it 2D- Does it move?

Appendix J

Stage three, axial coding of semi structured interviews- dyslexia (5)

The analysis for the 5 semi structured interviews for the dyslexic artists. Each colour and code identifies a particular interview. ie D5 is the interview with the fifth participant who is dyslexic. There are also 5 interviews of non-dyslexic artists. This template is yet to be set up. The approach was to review and reflect on the case study and survey work to draw themes out from the interviews. This is the start of that process. The analysis of the survey questionnaires and the semi-structured interview is an iterative process.

Selection of interviewees: An electronic call was sent to all of the participants who took part in the survey to request further participation in the next stage of interviews. Survey participants were then directly contacted based on the analysis of the survey and the emergent themes to ensure sampling of location, gender and age.

Themes Ways of interpreting ideas		Weighting of evidence	
Themes from survey of 12 dyslexic artists	Themes from individual 5 interviews	Main themes from interviews	Coding evidence of statements.
Holistic	Tangible	Tangible	D5 p1 Not complete until I actually get it printed out.
Solitary	Remembering		I see it as being finished when I actually produce it and see it.
Technology	Visualisation	Multi faceted/Spiral	D5 p1 Has to manifest as a print out
Visual	Multi- faceted thinking	Shapes	
associates	Storage	Colour	
WORDS	Shapes- colour	Experience	D1 p4 Each brick was an aspect of different things
Challenges	Technology	Intuitive/innate	D4 p2 I use bright coloured stuff no black, grey or white
Connections	Versions	Medium	D2 p1 It is a human experience I happen to be a human being who likes making stuff
Social media	Paradox	Dreams	D5 p2 I do review but not to a great extent, it is intuitive, its innate
Physicality	Consistency	Remembering/storage	
Processes	Places	Connections	D1 p4 I wake up with a theme
Research	Manifest	Time	My dreams are very
	Revisiting	Space	
	terrain		
	Tangible		
	Innate		
	Intuitive		
	Pieces		
	The whole		
	Physicality		
	Feelings		

exploration	Dreams	Flow Movement	colourful very vivid D1 p4 In my dreams I
Space	Searching	Connections	problem solve D4 p1 You train your brain
Environment	Problem	Searching/exploring/ Research	to pick out images to remember D5 p2 It is about memory, about place and time D1 p4 Some of these places come up in my life D3 p1 I keep a spider diagram in my wen browser D3 p1 I expand and expand then I get to a point too far away D5 p1 The finished piece is a paradox D1 p4 I can recreate what was in my dreams , I an move, fly swim around. See all different shapes D4 p1 you scan to find the research you need D3 p1 I have an open window in my browser D1 p4 I draw on photography to recreate images D2 p1 I like scavenging. The idea that anything is new always struck me as strange D2 p2 When you are drawing a compass circle there is a sore point where the needle goes and then you get excited again. D2 p2 It is stillness. A nice pointy thing going for stillness D5 p2 Word pieces I am interested in words. The different way you can use type. D2 p2 writing you can cram it in. D1 p5 Maybe a word a woven word from another language D1 p5 It's a trust in the person when exposing yourself when being creative D2 p1 I like to grab stuff
	solving	Analogies	
	Shapes	Metaphors	
	Images	Mapping	
	Different	Analogies	
	medium	WORDS	
	Sleep		
	Déjà vu	Trust	
	Recording	Physicality Technology	
	WORDS		
	Collaboration	Making	
	Continuous	Technology	
	Trust	Experiences	
	Empathy	Immediate	
	Physical	Circles	
	experience	Points of reference	
	Range of	Connections	
	inspiration	Links	
	Literature		
	WORDS		
	Human		
	experience		
	Real world		
	Searching		
	Time		
	Analogies		
	Metaphors		
	Making		
	Time		
	Motivation		
	Research		
	Technology		
	Iterative		
	process		
	Mapping		
	Connections		

			physically D2 p2 They are all potential materials
Themes Your strategies for thinking		Weighting of evidence	
Themes from survey	Themes from interviews	Main themes from interviews	Coding - evidence of statements.
Life experience	Iterative Mapping	Active doing/cognitive	D3 p2 I have a process of folders set up. Similar to my brain. There is a system as good as in my brain and on paper.
Solitary	Writing/words Challenges	Flow Intuitive	D3 p2 MY brain goes in many directions- some are gems to put away to keep
Non Analytical	Shapes Process	Tangible	
Intuitive	Brainstorm Analyse	Training	
Pragmatic	Actively looking	Shapes	
Trust	Actively doing Experiences	Time and space	D5 p6 Its natural- non-intellectual. Its not being reflective not analysing. You just do it.
Caution	Existence Multi faceted (viewed in every way)	Space connections	D4 p2 I knock out a brainstorm
Process reflection	Tangible Clarity	Flow thinking	D3 p1 If I print them I print off lots of different images
Visual analogies	WORDS Training Simplicity	Visual analogies	D5 Its about living
WORDS	Time and space	Visual metaphors	D3 p2 Always negative space
Technology	Manifest	Understanding/ empathy	D3 p3 You get further away to the point you are so far away that you are sometimes connected. You delete certain parts then you get closer. Then you realise the ideas are far away from each other.
Multi-stimulus	The moment Iconology	Audience	D3 p3 You got the ideas the two expansions then that makes a solid triangle idea
Sound	Stages- process	WORDS	D5 I was trained to deal with modernist ideas
Individualism	Intuitive- natural	Collaboration	D3 p1 I look for visual connections shapes colours I try to merge together
Connected to the environment	Innate	Clarity	D3 p2 I can see the connection but I dont think it is strong I think my brain is different to other people
Real world	Openness with Dyslexics	Logic	D4 p2 Every idea on one
Risk taking	Collaboration	Existence	
Expansion/space	Intuitive	Searching ideas	
	Speed of work	Making	
	Understanding	Physicality	
	Negotiated		
	Empathy		
	Active doing		
	Trust		
Spark moments	Searching investigation	Symbols/ iconology	
	Making	View/ focus meaning	
	Vision		

Focus	Multi- faceted	page in endless lists
Metaphors		D4 p2 I never draw images it takes too long I would rather write
Audience		D3 p2 I store in a logical place- you make connections that can be ridiculous but make sense to you
Communication		D3 p3 I do all my creative writing on my iPod so that all my logical lists go on my hand
Detached		D5 p 4 The images I produce are flat
Experiences	Multi dimensional	D5 p4The content within that can become multi dimensional.
Reflecting		D3 p3 Its just words in Helvetica. Its an extra element that makes you go WOW. You make yourself think that's good in my brain
Mulling		
Concepts	Words	
Too much analysis	Logic	
Making		
Processes	Structure	
Tangible		
Shapes	Tangible	
Connections		
Logical storage		
Memory	Meaningful	
connections		
Objects	Writing	
symbols		
Physical	Connections	
storage		
Tangible	Intuitive	D2 p2 Its like being a blind person
Tangents		D3 p2 I will write things on my hand then I put on my iPod or moleskin
Processes	Collaboration	D3 p3 I need logical structure. I look at my hand with my bullet points tattooed. I always have a list of never more than 8 things
systems		D1 p6 Just interpreting and getting off on each others it just made sense. Got work done so quickly.
Meaningful	Ideas	D2 p3 The audience is an abstract
Feedback		D2 p3 I like people to see them and get fun.
Space	Interpret	
WORDS		
Space	Symbols	
Mapping		
Multi faceted	Multi Faceted	
Physical		
Remembering	Narratives	
Structure		
Analogies		
Technology	Meanings	
Clarity		
WORDS		
Write		
Intuitive		
Research		
Stages		
Ideas		
	Visual memories	D3 p2 I didn't think this idea was strong and I had 2 other ones that are killer ideas I always do 3 ideas.
	Multi dimensional	D1 p5 Collaboration working. You get your ideas bouncing. As a

			<p>team we finish each others words</p> <p>D5 p 4 I like the idea of simplicity- clarity something that is quite uncomplicated</p> <p>D3 p2 Doubt meaning</p> <p>D5 p3 Its about living its about your existence</p> <p>D2 p3 Ones life -all your history is a dialogue</p> <p>D3 p2 The only reason it gets meaning is because other people have given it meaning.</p> <p>D2 p2 Why should God only have the fun of making stuff. I want to make things. Make something not there happen in the world.</p> <p>D5 I remember things visually But doesn't every body?</p> <p>D5 p4 I am interested in multi dimensional perspectives</p> <p>D3 P1 They asked how did you get there. I say its many different processes</p>
Themes Your views on creativity and production		Weighting of evidence	
Themes from survey	Themes from interviews	Main themes from interviews	Coding evidence of statements.
Risk Bravery Truth Paradox Extremes of life Imagination Metaphors Relationships	Natural inspiration Analyse Audience Image Multifaceted movement Audience Training Pragmatic Categories Parts of life Experiences Structure WORDS Intense	WORDS Parts of life Audience Survival Maths/ Geometry Multi faceted Emotion/feelings metaphors	<p>D1 p8 Words have wonderful meanings. You say them and they don't make sense</p> <p>D1 p9 Words have colours- like 'voluptuous' its green</p> <p>D4 p3 It comes naturally- you train your brain to analyse</p> <p>D2 p6 I am working with clay-and think this was the first way to write</p> <p>D4 p3 Its got to be successful for the</p>

Symbolic	Emotion	Experience	audience- as long as they like it
Holistic	Multi faceted	Space/ movements	D1 p7 It's a mathematical thing a geometric thing- I try to problem solve
Reflection	Visualisation	Flow Movement	D1 p8 Words I can see them better if I make them 3D than if I look at them in 2D
Childlike	Space	Time	D4 p3 its shapes, patterns, bold shapes and colours
Passionate	Colour	Structure	D3 p5 I get on a roll, I don't stop
Emotion	Time	Patterns	D3 p5 I use colour to say don't go there. It is usually grey- its shades
Living	Movement	Parts	D3 p5 I use emotion it is colour. Colours are relationships
Different perspectives	Feelings	Internal space	D1 p9 I put words together in patterns not sentences, which I can walk round
Symbolic meaning	Tactile	Visual Structure	D5 p6 I look back on the parts of my life
Action	Multi		D5 p6 I like to think about things but not the way it suits others
Creative analogies and metaphors	occupation		D2 p7 Creativity it is a special space. An internal space
	Problem solving		D5 p6 I establish my own structure
	Maths		D5 p 6 I embrace structure
	geometry		
	Imitate		
	Differences		
	Dyslexia		
	Isolation		
	Analogies		
	Survival		
	Life		
	Visual		
	Hierarchy		
	Maths grading		
	Space		
	Multi faceted		
Themes Approach to creative production		Weighting of evidence	
Themes from survey	Themes from interviews	Main themes from interviews	Coding evidence of statements.
Curiosity	Audience	WORDS	D2 I write poems, I loose them- I forget them
Imagination	Training	Fast	D2 p6 The text I have written I have made it look stylised
Detailed analysis	Writing shapes	Shape	D1 p11Very fast – incredible rushes- I have to physically slow the visual images in my head- like a speeding train
Symbolic meaning	Solid	Multi faceted- ways of seeing- Flow	D1 p10 I work on my
Paradox	Ethereal		
	Translated ideas		
	Connections		
	Multi		
	faceted/Spiral		
	WORDS		

Truth	Shape colour	Analytical	production all at once
Passionate	texture	Intense emotion	D1 p8 I see words as potential art pieces the shape and texture
Emotion	Patterns of symbols	Patterns of thinking	D1 p8 Scribing writing shapes to focus on the idea
Part of the whole	Space	Flow thinking	D4 p3 Image is shape, bold shapes
Reflection	Sounds	Movement	D1 p8 Words create patterns-forms shapes for connections
	Intense	Spatial qualities	D3 p6 It's a tangible object in my head- it has texture
	Life	Tangible	D1 p6 its stuck in a circle
	Re energise	Inner and outer space	D1 p7 I love the vibrations-
	Fast	Inspiration	D2 p6 Its two zones you go into space
	Thinking	Emotional responses	D1 p6 It would be a spiral in my mind- I can move up- walk round
	Observing	Intuitive	D1 p10 I become engrossed in an idea
	Quiet	Flow feelings	D1 p8 I like solid form.
	Analogies	Flow visuals	D3 p6 Its like a yellowy colour . it is an intuitive meaning
	Long time		D2 p6 its an internal physical thing rather than visualisation
	WORDS		D1 I get lost in the velvety pillow- lost in the depth
	Too much analysis kills		D1 p6 It flattens, it extends- it squishes up in other places. Sits at a wonky angle
	Transformation of materials		D5 p7 Not visual how I remember. Its challenging
	Experiences		D2 p6 Great art is like being electrocuted
	WORDS		D5 p6 I talk about my own practice- it's a mix of professional and practice
	Space		
	Physical		
	Time		
	Impact		
	Reflection		
	Internal space		
	Process		
	Colour		
	Emotion		
	Intuitive		
	Multi faceted		
	Process		
	Memory		
	Feeling		

Appendix K

Consent form and participant information

CONSENT FORM: You will be given a copy of this form to keep.

Name of participant:.....

Research title: The investigation of dyslexic thinking and creativity in the visual Arts

Main investigator and contact details: Katherine Hewlett,
Norwich University of the Arts, Francis House, 307 Redwell Street,
Norwich NR2 4SN. Email: hewletk@westminster.ac.uk or hewlettk_uk@yahoo.com.

- 1 I agree to take part in the above research. I have read the Participant Information Sheet which is attached to this form. I understand what my role will be in this research, and all my questions have been answered to my satisfaction.
2. I understand that I am free to withdraw from the research at any time, for any reason and without prejudice.
3. I have been informed that the confidentiality of the information I provide will be safeguarded.
4. I am free to ask any questions at any time before and during the study.
5. I have been provided with a copy of this form and the Participant Information Sheet.

Data Protection: I agree to the Norwich University College of Art and University of the Arts * processing personal data which I have supplied. I agree to the processing of such data for any purposes connected with the Research Project as outlined to me.

Name of participant (print).....Signed.....Date.....

Name of witness (print).....Signed.....Date.....

If you wish to withdraw from the research, please complete the form below and return to the main investigator named above.

Title of research: To investigate how Dyslexia impacts on the process of creativity in the visual arts.

I WISH TO WITHDRAW FROM THIS STUDY

Signed: _____ Date: _____
University of the Arts being the validating institution

Participant Information Sheet to be read before consent is given

Title of research: The investigation of dyslexic thinking and creativity in the visual Arts

Dear Participant,

This research aims to investigate thinking approaches to the process of work conducted by visual arts practitioners who are dyslexic. The purpose is to investigate whether these practitioners (who are dyslexic), approach the process of their creative work in a particular way that might inform the development of differentiated learning styles in mainstream education. The research aims are to collect evidence through mixed methods such as in-depth case study interviews, one to one semi structured interviews and an online survey. The focus of this research is:

- To evaluate those thinking approaches
- To support the development of a value added approach to curriculum design with reference to independent and differentiated learning.
- To examine how different thinking to production can contribute towards different outputs throughout the process of developing visual art.
- To reach conclusions on the impact of dyslexic-influenced thinking on visual arts practice
- To disseminate the findings to relevant stakeholders in mainstream education

As the organiser and main investigator of this research project I would like to invite you to participate in this work. You have been invited to take part due to your work as a practicing artist and as an assessed dyslexic and a non-dyslexic practicing artist . If you take part you will be asked to discuss your learning journey- thought processes/ decision making/ overall response to the making of your work through one to one or group discussions. There are no special precautions you would need to take before, during or after taking part in the study. The information collected from participants will be analysed, to assess the evidence, that differentiated learning and thinking approaches can benefit the learner in their independent learning journey. At all times I will ensure that the data collected will be securely archived during the research. You can withdraw at any time during the research project by stating this on the attached consent form.

The overall benefit to participation will be to raise awareness of the contribution Dyslexic learners can make to teaching and learning in mainstream education. By participating you will be directly contributing to the successful provision of appropriate learning for Dyslexic students. At all times your participation will be confidential and when the findings are published, in either electronic or paper version, all reference to the participants be anonymous (unless you state otherwise) to ensure this confidentiality. Data that is collected from the research will be kept up to 2017. after that time the data will be destroyed through either shredding or complete deletion.

Appendix L

Example transcription of third interview session - stage one

SB: third case study session 3 March 2011

KH intro: I have given SB the transcriptions of the session previously, also the summary of the 2nd. In addition, I have read through to SB the summary of the participants to date and where they are placed with their creative practice- revealing the common threads going through the case studies to date. We have discussed this and I have given SB time to reflect and she has looked at the core questions, which were given to LC last week. There are four questions to ask. This is the final one to one case study interview session before the exhibition part of things.

KH: What prior experience has shaped you today?

SB: Everything that has happened which I can remember and can reflect on. So growing up in a large household, which was very busy with, lots going on. Finding quiet time on your own - making songs and working on your own. Also experiences in the workplace with friends all have led to a place where I think about things and the relationship between different experiences and how I have reacted. By singing being able to manage those emotions and make sense of everything. Everything has fed into it! Nothing particularly major happened to me that has caused this. It is just way I have been. As I get older- I grow -and through this research knowing that other people have similar experience despite coming from different backgrounds. Understanding through this research has fed into a much clearer picture. Just life!

KH: Supplemental question. Are there any people in your life and growing up who were exceptional for you?

SB In what way?

KH In that they understood the way you were - gave you lots of support in your development and in your learning

SB Oh yes first my Aunty Dawn, she was a singer when I was growing up. Seen by the family as quite different in the family. Not the studying type and quite different and enjoyed by them. She was always different and very strong and independent. Then going onto Sixth Form. I had a tutor. All through school -I was seen as disruptive - not being able to sit still. Not listening. Imitating people's accents and the way people speak and their behaviours. I could not keep still. When I got to sixth it was a problem as I was at a different mode of studying. I was expected to change my behaviour to suit the environment. I could not. I had a sixth form tutor from Middlesex University who was studying learning differences.

Appendix M

Stage three example of D1 transcription of interview

CO (D1) 2 March 2012

KH: Explained about the process which is to look at her survey and to actually to start to do something quantitative with the feedback and then we are going to have a conversation about the questions.

KH: It could be quite intuitive-do it really quickly

(CO does the survey)

KH: You might find it a bit difficult- I am not sure I put a box there. Just stick 5's in there

KH: You just need to go further down

(CO does the quantitative part of the survey)

CO: Done - I dream my work then I paint my dream.

KH Great. It actually works! Did it make sense to you while you were doing it?

CO It was good

KH Really pleased it worked. How much is it part of your creative practice?

CO That means something

KH It has now become quantitative

KH: What the originally research questions were? I realise I have done this research all the wrong way round. The HEA say to survey a large pool then drill down. But I worked with a small pool and have gone up. What I did was work with the case study people then did the survey

With the survey there was 40 feedback- third of them were Dyslexic. The difference is how Dyslexics explore and source and how they work to produce ideas -very broad and multi dimensional

CO Everything influences

KH: Everything is coming in – problem is the filter system to make a decision- to decide which way to go

CO For me that was an issue until I started linking up artists. I love history- archaeological stuff. My first love is Goya and Kant. I do the dates- as when I linked to historical facts then this helped me to focus on the reflection needed to anchor my thoughts otherwise I drifted off. I have to organise my thoughts with history

KH That is how you had a structure

CO It helped me to be reflective. I was not taught reflection at school.

CO I want things to be simple as possible not to overload them. The purpose of the theory is to link it to history. I set homework to visit buildings. This is how I think then put it on paper and give it to some one else.

KH Is there a pattern for Dyslexics to get more analytical when they get older?

CO They are very critical of themselves. Have anxiety because of empathy - almost a mind reader you can tell things can happen. Fear of being laughed at. Already feel like an alien; why give yourself another head.

Second recording

CO So I do believed they are very reflective some of the learners at a younger age. They are not, I think it only happen from 18 onwards tends to happen -still forming your ideas while you are being nagged by your mother

From then they are starting to realise qualities within themselves- they can reflect, they are really critical in a positive way. They see great improvement from the perspective of education and artists They can see quite clearly a difference. In their last year's work compared to this year. That is without taking something they produce that is reflecting back. They are artists they can see the difference in last years work compared to this years.

They are also able to reflect forwards they can picture them selves on ten years what you know now and what you know then - what you can do with that. That is a positive aspect of Dyslexia.

KH: What I found interesting with case study people –is that finally they were very reflective, analytical, self-critical. When this research got to the survey stage the Dyslexic people were reflective, critical analytical yet they did not use many words – you would expect this. They were encouraged to do something else but they didn't have to fill the questionnaire in . It is almost as though it takes quite a while to feel they are able to articulate . It took quite a long time with case study people -until they started to flourish with their exhibition.

Appendix N

Stage three, themes drawn from axial coding of Non-Dyslexic group of five artists

Ways of interpreting ideas:

Research:

Note making- obsessive-keywords- internet- reflection-academic

Logic:

Writing-academic-theory

Narratives:

Interactive-themes-concepts-imagination-2D

Connections:

Themes- language-emotional-memory-colour-2D-interaction

Thinking strategies:

Connections:

2D- 3D-visual-symbols-transitions-linear- stills-shapes-music

Logic:

*Direction- components- control-constant-deadlines-objective-
regimental-stages*

Testing:

Reflective-visual preference-risk-tangible-time-physical-environment

Relationships:

Audience- people-emotion-life experience-thinker- memory

Reading:

Research- notes-compositions-data-tutorials

Creativity and production

Making:

Form-evidence-process-tangible-translate-shape-senses-physical-

Audiences

Seeing- judgments-installation-writing

Theory:

Books-judgment-structure-challenge-tangible-detached-writing

Focus:

Stages-continuity-research-methodical-relevance-linear

Appendix O

Stage three, themes drawn from axial coding of dyslexic artists

Ways of interpreting ideas

Tangible and non tangible

Dreams- words- remembering –storage-colour-meaning

Trust (grounding elements)

Physicality-research-intuitive- innate- experience- words

Analogies/ metaphors

Symbolism/ images/ places

Mapping

Searching- connections- technology-the whole

Multi-faceted thinking

Time -movement- space- linear- shapes- the paradox- flow

Strategies for thinking

Tangible

Non -tangible- audience- active doing- audience- words- visual analogies- meaning

Intuitive

Collaboration-existence- solitary- clarity- understanding- meaning-logic

Multi-dimensional thinking

Visual metaphors- analogies- space connections-time-shapes- iconology- symbols- meaning-words-the thinking point-flow

Training

Terminology- words- visual systems

Thinking and Making

Physicality- making-existence-understanding- meaning- words- visual metaphors-analogies- meaning

Views on creativity and production

Multi-dimensional

Spiral movement-space-structure-time-visual- ways of seeing- analogies

Experience and Emotion

Solitary-survival-audience-parts of life-feelings- tactile- emotion-solid- ethereal

Approach to creative production

Language

Words- professional view- visualization- analogies- the last question- multi faceted- flowed visual thinking

Appendix P

Visual analysis of fieldwork stage two: Questionnaire sections two, three and four

Coding of groupings:

Dyslexic Female 18+	DF 18+
Non-Dyslexic Female 18+	NDF 18+
Dyslexic Female 25+	DF 25+
Non-Dyslexic Female 25+	NDF 25+
Dyslexic Male 18+	DM 18+
Non-Dyslexic Male 18+	NDM 18+
Dyslexic Male 25+	DM 25+
Non-Dyslexic Male 25+	NDM 25+

Survey sections of questioning:

Section S3 Analysing, Section S4 Acquiring ideas and Section 5 are listed in this thesis under Appendix Q. All other sections can be viewed by request.

S2 Ways of Interpreting Ideas

S2 *Sources*

S2 *Gathering*

S2 *Meaning and links*

S3 Your Strategies

S3 *Experiences*

S3 *Analysing is listed in the thesis as Appendix Q*

S4 Views of Creativity

S4 *Own practice*

S4 *Acquiring ideas is listed in the thesis as Appendix Q*

S5 Approach to production is listed in this thesis as Appendix Q.

S5 *Review and influence production is listed in this thesis*

S2 Ways of Interpreting Ideas

S2 *Sources*

S2 *Sources*

S3 Analysing



DF 25+



NDF 25+

S3 Analysing



DM 18+

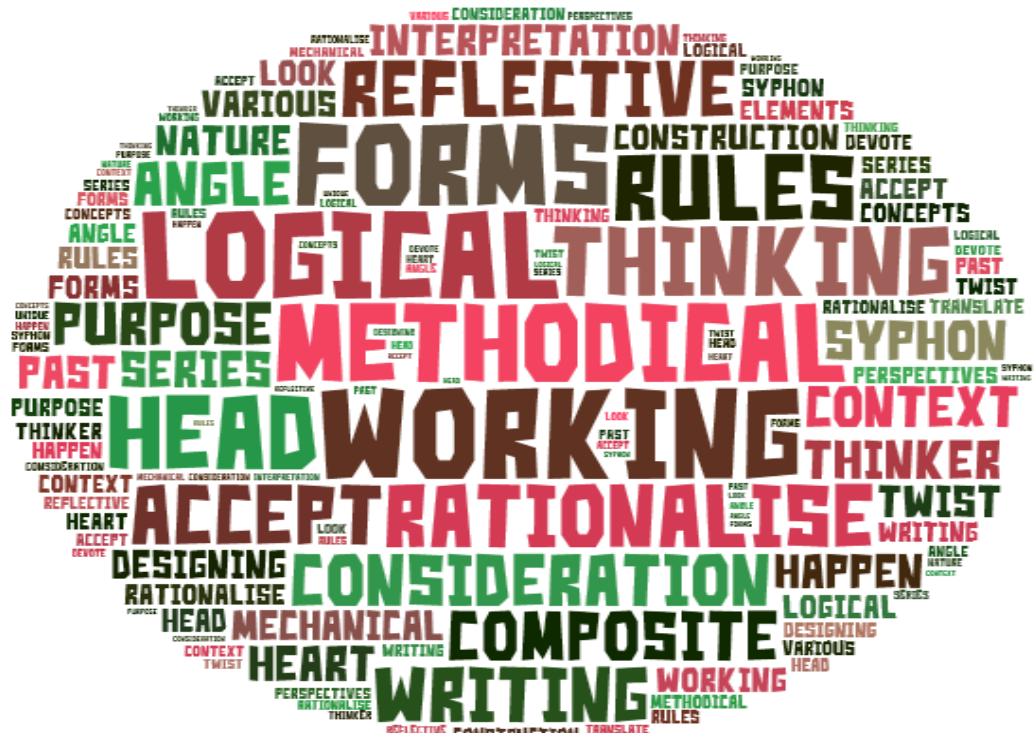


NDM 18+

S3 Analysing



DM 25+



NDM 25+

S4 Acquiring ideas



DF 18+

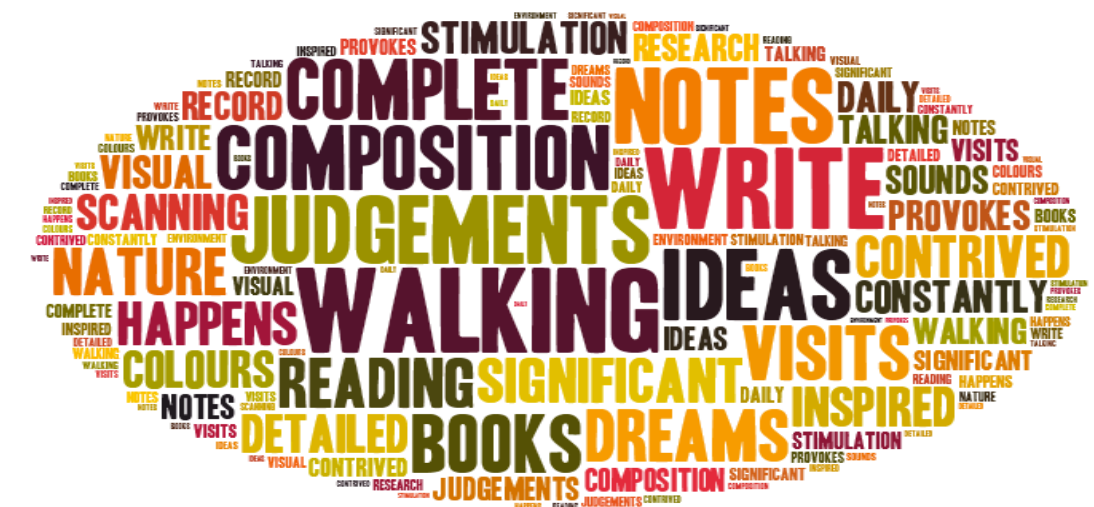


NDF 18+

S4 Acquiring ideas

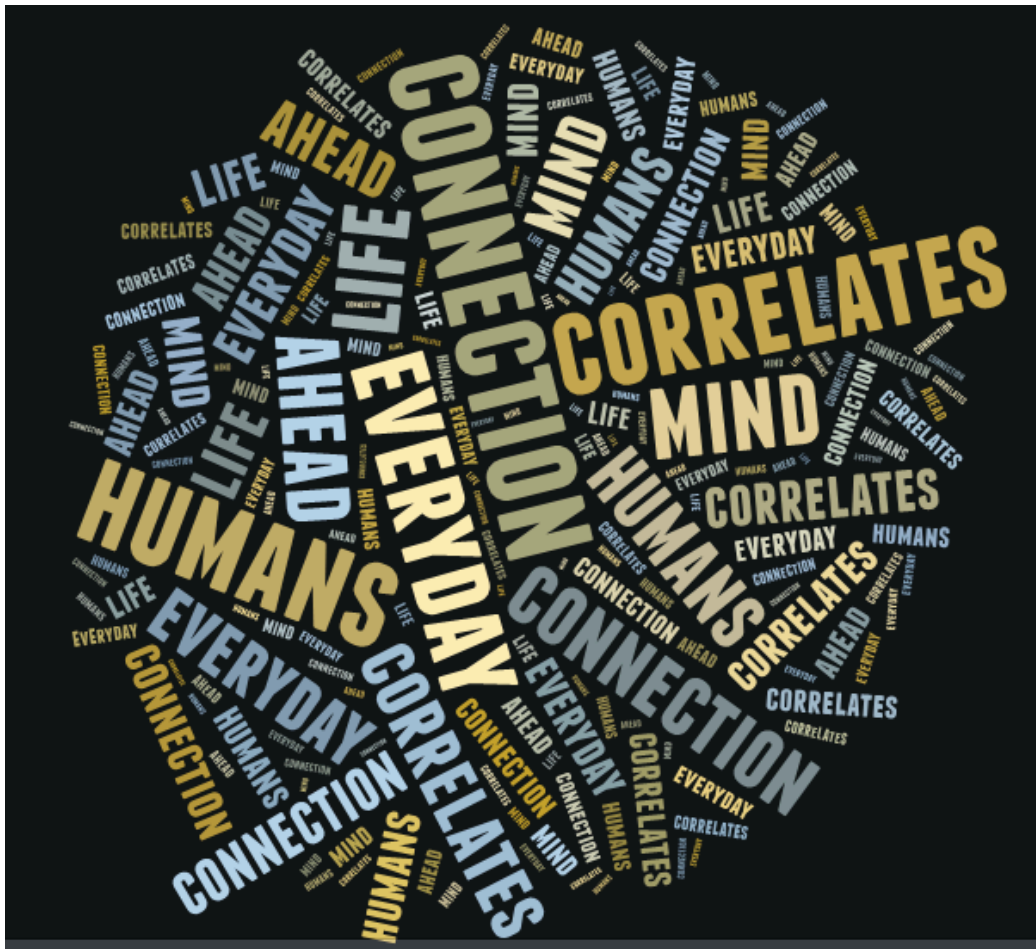


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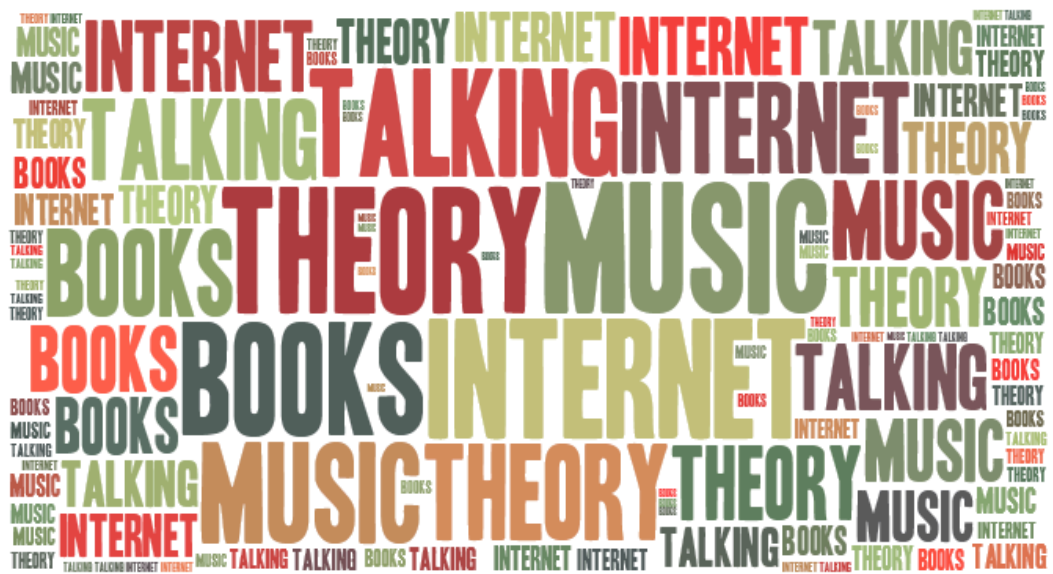


NDF 25+

S4 Acquiring ideas



DM 18+



NDM 18+

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S5 Approach to production



DF 18+

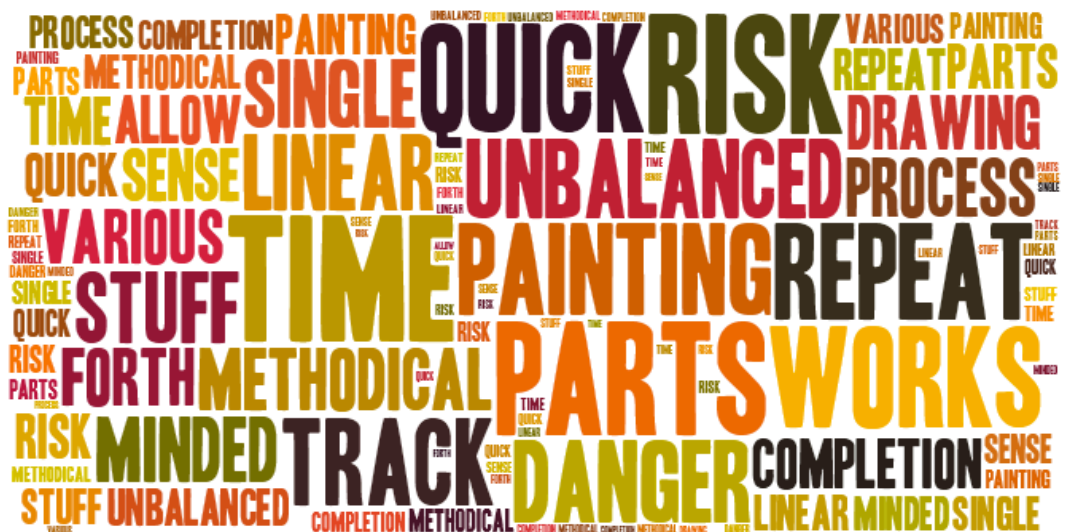


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S5 Approach to production



DF 25+



NDF 25+

S5 Approach to production



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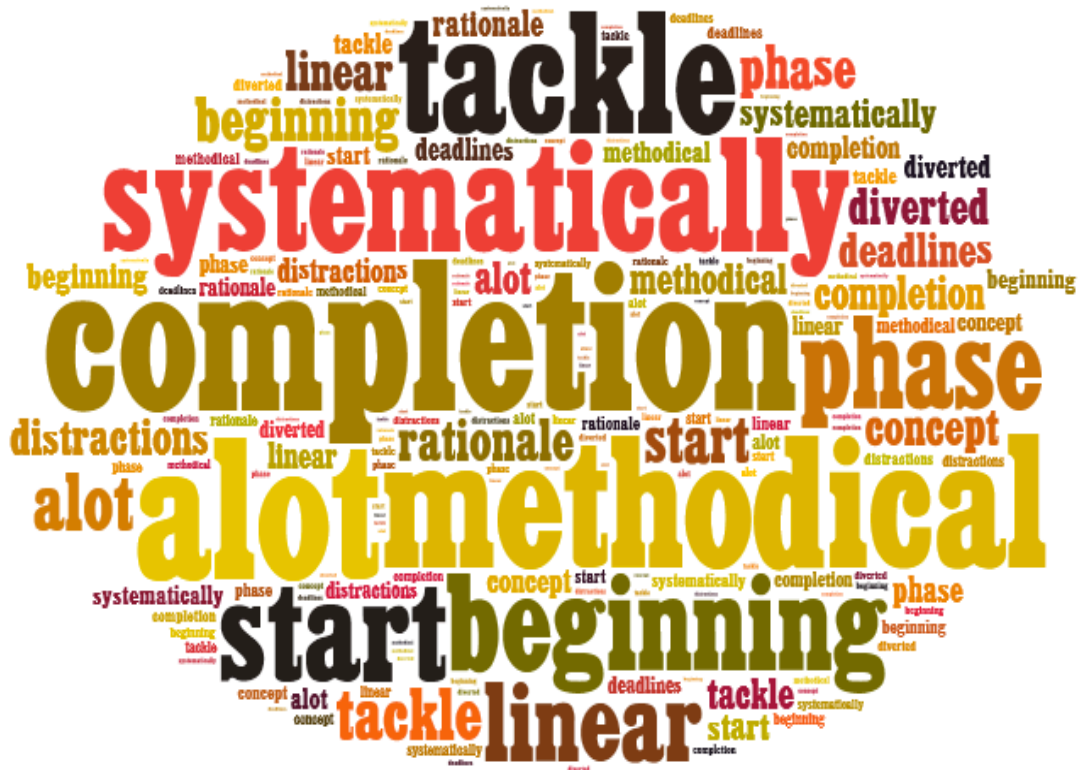


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S5 Approach to production



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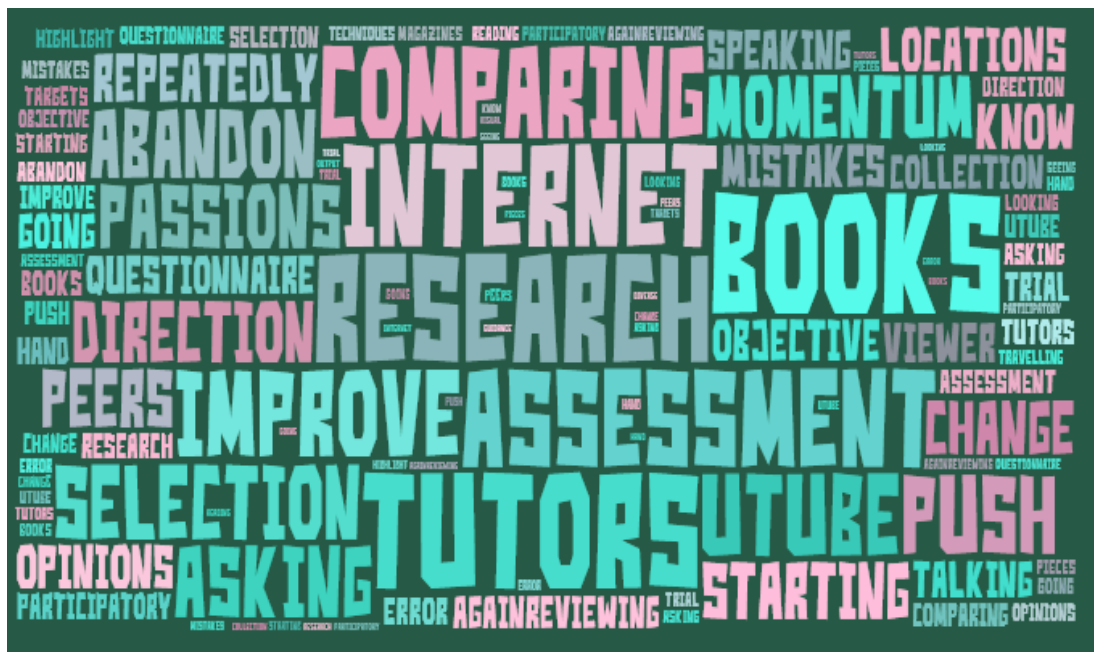


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S5 Review and influence



DF 18+

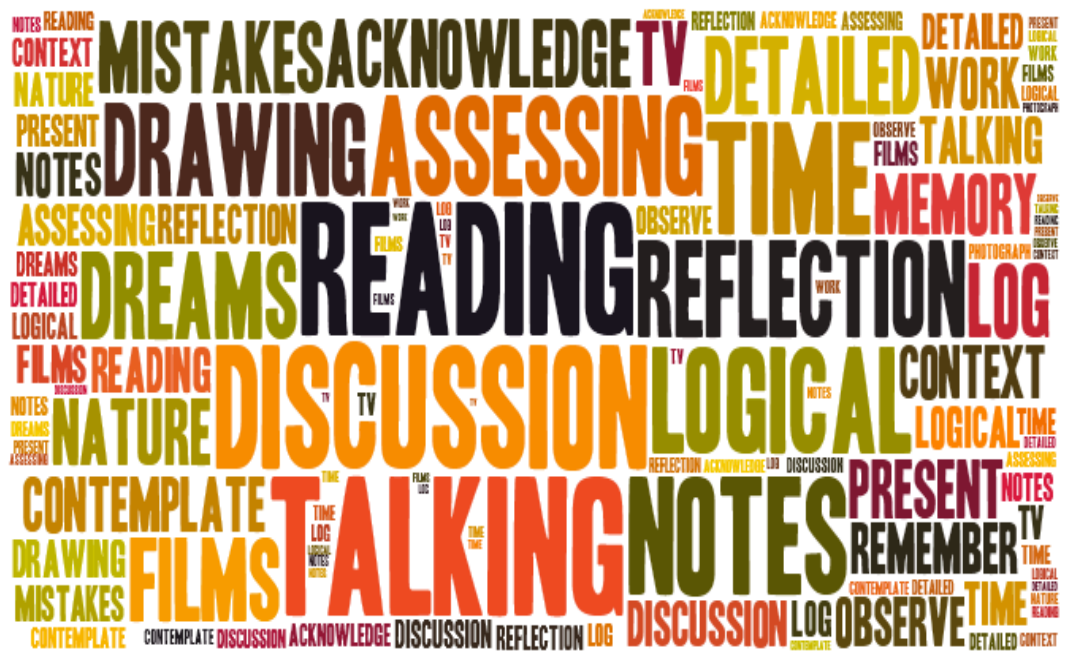


NDF 18+

S5 Review and influence



DF 25+



NDF 25+

S5 Review and influence



DM 18+

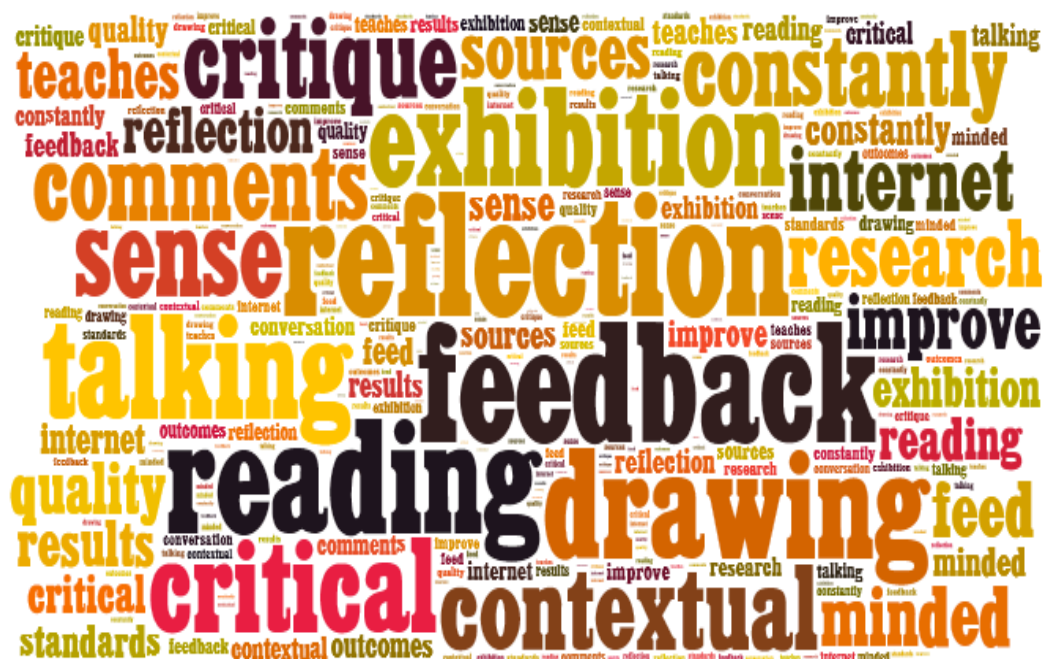


NDM 18+

S5 Review and influence



DM 25+



NDM 25+